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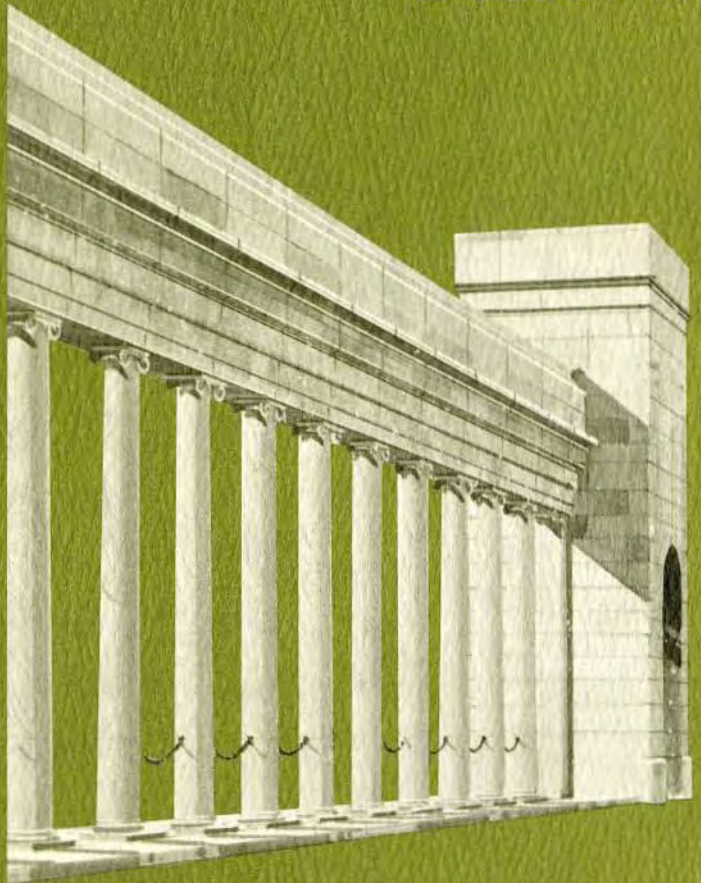
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WESTERN KENTUCKY UNIVERSITY
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Western Kentucky University

GRADUATE COLLEGE Bulletin





GRADUATE CENTER

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American Council on Education



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HISTORY OF WESTERN KENTUCKY UNIVERSITY

Western Kentucky University, located in Bowling Green, was established by act of the 1906 Kentucky General Assembly. Prior to 1906, there had existed in Bowling Green the Southern Normal School and Bowling Green Business University, whose president was Dr. Henry Hardin Cherry. In 1907 the Southern Normal School was transferred to the state, and Dr. Cherry was selected as the first president of Western Kentucky State Normal School. In 1922 the Kentucky Legislature changed the school's name to Western Kentucky State Normal School and Teachers College and empowered the College to award degrees to its graduates. In 1930 the school's name was changed to Western Kentucky State Teachers College, and in 1948 to Western Kentucky State College.

In 1964 the Bowling Green College of Commerce was organized into an academic division of Western, and the Graduate Division was changed to the Graduate School. In 1965 Western's Board of Regents approved the formation of three new colleges, the College of Education, the Potter College of Liberal Arts, and the Ogden College of Science and Technology. In 1969 the College of Applied Arts and Health was added, creating a total of six colleges in the structure of Western. The Kentucky General Assembly in 1966 designated Western as a university and changed the name to Western Kentucky University.

FACILITIES AND CULTURAL PROGRAMS

Community Concert Series. In co-operation with the Bowling Green-Warren County Community Concert Association, the University provides each fulltime student free admission to all concerts sponsored by this group. Nationally and internationally known artists are scheduled for a series of four concerts each year.

Computer Center. The University maintains a computer facility which is used by students and faculty in the conduct of research involving large data samplings and complex mathematical analysis. Students interested in processing their own data are permitted to do so after an orientation covering available programs and operating procedures. Personnel in the computer center are available for consultation throughout the day.

Dial Access Information Retrieval Center. This facility, installed in the Margie Helm Library, provides forty listening carrels and has a capacity for sixty-four programmed audio sources. Commercial tapes have been

purchased for use in addition to tapes prepared by professors for specific assignments.

Hardin Planetarium. The Hardin Planetarium is a circular unit adjacent to the Thompson Science Complex. The Planetarium contains a Projection Hemisphere Room and a roof-top observatory which houses a 12½-inch Cassegrain reflector and associated photoelectric equipment.

Lecture Series. The Rodes-Helm Lecture Series was endowed in 1961 by Mr. and Mrs. Harold Helm, of Montclair, New Jersey. The lecture series is named in honor of the late Judge John B. Rodes, father of Mrs. Helm and former Circuit Judge of Warren County, and Miss Margie Helm, sister of Mr. Helm and former Director of Library Services at Western. The endowment fund is to be kept intact and the income from it is to be devoted to bringing distinguished lecturers to the Western campus.

The University Lecture Series brings to the campus three or four nationally known lecturers each school year. Students, faculty, and the general public are admitted to all lectures free of charge.

Numerous other opportunities for cultural development are available at Western through the University and the city of Bowling Green. These include literary societies, religious organizations, civic clubs, and special-interest colloquiums.

Recreational Opportunities. Encouragement is given to students and faculty to use the Athletic Complex facilities regularly. Facilities for swimming, dancing, tumbling, gymnastics, table tennis, judo, karate, wrestling, basketball, volleyball, badminton, tennis, weight training, conditioning, handball, squash tennis, and archery are available. Equipment is made available on a non-charge basis to students and faculty.

Religious Life. Western Kentucky University is a state-supported institution and therefore non-denominational, but it is distinctly interested in the religious life of its students. On request, meeting places and faculty supervision are provided for student denominational clubs. The Western Religious Council serves as the coordinating organization for religious activity on campus.

Summer Quarter in Mexico. Western Kentucky University has a contract with the University of the Americas whereby qualified students from Western and other institutions may participate in various summer

programs on the campus of the University of the Americas in Mexico City. The basic programs are the Summer Quarter (six to eleven weeks) and Workshops (six weeks each) in The Mexican Way of Life and in Mexican Culture. Additional programs, including other workshops during the summer or the Junior Year Abroad, may be added if the demand arises. Undergraduate and graduate students may obtain from six to ten semester hours (or more, with special permission) resident credit at Western Kentucky University under the present programs in several areas of study.

Information about specific courses in any of the areas may be obtained from Dr. Paul Hatcher, Dean of the Potter College of Liberal Arts and Chairman of the committee for admission to the Summer Quarter in Mexico Program.

UNIVERSITY LIBRARIES AND RESOURCE CENTERS

Margie Helm Library. The Margie Helm Library, completed in 1965, has a book capacity of 350,000 volumes and has study carrels for graduate students and professors. Through library memberships or subscriptions, graduate students and professors have access to services of DATRIX of University Microfilms. The library offers aid to researchers through extensive bibliographies, abstracting services, and interlibrary loan. The library is a depository for federal, state, and selected United Nations documents. Significant collections of research material in several fields are available in various forms of micro-reproduction. Most noteworthy among these collections are: Human Relations Area Files, Jeffersonian Americana, Oberlin College Collection of Civil War pamphlets, Early American Imprints, the Wagner-Camp bibliography of the Plains and Rockies, Kentucky Culture, Travels in the Old and New South, Presidential Papers, the Draper Collection of American History, Facsimiles of Manuscripts of European History, Literature of Folklore, titles in Pollard and Redgrave's Short-Title Catalogue of Books Printed in England, 1475-1640, *Journal Officiel de Francais*, and ERIC documents.

Under the terms of the cooperative arrangement between the University and the Warren County Law Association, the library of the Association is housed in the Helm Library. Other significant holdings in this general area are National Reporter, California Reporter, New York Supplement, subscriptions to publications of the Commerce Clear-

ing House, Bureau of National Affairs, Prentice Hall Tax Service, National Industrial Conference Board, Organization for Economic Cooperation and Development, and investment services.

Science Library. The Science Library, centrally located in the Kelly Thompson Science Complex, specializes in providing books, periodicals, and services necessary for instruction and research in the subject areas of agriculture, astronomy, biology, chemistry, engineering technology, mathematics, and physics. The collection includes 18,000 volumes and 600 current subscriptions to journals, abstracts, and indexes.

Kentucky Library. The Kentucky Library, located in the east wing of the Kentucky Building, contains research materials available in all phases of Kentuckiana. There are 22,000 books, a large number of early newspapers and periodicals, state documents, broadsides, photographs, maps, microfilm, original cartoons, and art prints. Also available are church records, clippings, sheet music, and scrapbooks.

There are a number of outstanding collections in the manuscript division, such as the Lewis-Starling papers, the Joseph R. Underwood papers, the Calvert-Younglove collection, the South Union Shaker records, and the Janice Holt Giles manuscripts, among others.

The Kentucky Library also houses the Western Kentucky folklore collection, which includes the Gordon Wilson linguistic study of the Mammoth Cave area and the Allan Trout Collection. The Trout Collection contains the printed folk columns of Will S. Hays, Anthony Woodson, and a complete file of Trout's "Greetings" column.

Education Resource Center. This center, located on the third and fourth floors of the Education Complex, provides research materials and instructional resources which support the curricula of the several departments in the College of Education and the Teacher Training program.

Graduate Center. The Raymond L. Cravens Graduate Center, housing the Graduate Library and the Office of the Dean of the Graduate College, has study carrels, seminar and conference rooms, and a book capacity of 400,000 volumes. Graduate resources will be administered from the following divisional collections: Education, Humanities, Documents, Social Sciences, and Law and Political Science.

SERVICES

Housing Facilities. The securing of housing is the responsibility of the student and the following information is provided to aid the student in obtaining housing.

University dormitories accommodate 2,532 graduate and undergraduate men and 2,975 graduate and undergraduate women at an approximate cost of \$140 per semester and \$70 per summer session. (No meals are included.) In addition, off-campus housing may be obtained. Address all inquiries concerning university and off-campus housing to the Director of Housing.

Food Service. The University maintains a variety of food services on the campus including: two cafeterias on the first floor of the Paul L. Garrett Conference Center and one in the Dero Downing University Center. Other facilities include a Snack Bar in the Garrett Conference Center and one in the Downing University Center; a grill on the ground level of West Hall; and a sandwich shop (complete vending and self-service facilities) on the ground level of Terrace Hall.

Student Health Service. The L. Y. Lancaster Hospital Clinic, located in the Academic Complex, is a modern facility providing out-patient and in-patient services with two full-time physicians and other appropriate personnel. It contains 50 hospital beds and is designed to facilitate handling of most acute illnesses not requiring surgery.

The out-patient service is fully operational Monday through Friday from 8 a.m. until 5 p.m. Emergency care is available after 5 p.m. during the weekdays and the in-patient service is staffed 24 hours a day.

Other Services. The University maintains other services, including Student Health Insurance, Bookstore, Laundry Service, and Post Office.

FEES AND FINANCIAL ASSISTANCE

Fees for Graduate Work	Resident	Non-Resident
Full-time Students:		
Semester Registration Fee.....	\$150.00.....	\$400.00
Summer Registration Fee.....	75.00.....	200.00
Part-time Students:		
Students registering for less than full load:		
Registration fee per credit hour....	\$ 14.00.....	\$ 42.00
Miscellaneous fee.....	6.00.....	6.00
The University reserves the right to change fees without notification.		

Financial Assistance. The following financial aid programs are available:

1. Scholarships (General Academic)
2. Western Kentucky University Workship and College Work Study
3. National Defense Student Loan—for long-term financing
4. Veterans Administration Benefits

For specific information relative to applying for financial assistance, contact the Student Financial Aid Office located in the Craig Alumni Center.

Graduate Assistantships. Graduate assistantships are available in various departments to well-qualified persons. Appointments are made for the academic year only, and the stipends range upward from \$1,500 depending upon the student's qualifications and the duties assigned. In addition to the remuneration in the form of the stipend, the out-of-state portion of the student's fees is awarded in the form of a scholarship. Assistants are permitted to carry at least a minimum full graduate load, and some departments require graduate assistants to attend seminars in teaching. Graduate assistants have a dual role as graduate student and member of the University instructional staff. As a member of the instructional staff, graduate assistants have professional responsibilities to the University. They should familiarize themselves with University policies and responsibilities and are expected to fulfill faithfully their obligations in this respect. Stipends are paid at the end of each working month.

To be eligible for a graduate assistantship, the student must be eligible for admission to the Graduate College in good standing. Applications are made to the Dean of the Graduate College, and appointment is based upon the recommendation and approval of the head of the department in which the assistantship is granted. In addition to the formal application, three letters of recommendation (from persons whose relationship with the applicant has been such as to enable them to render a fair evaluation) must be on file in the office of the Graduate College. To receive maximum consideration, the application for an assistantship beginning in the fall semester should be in the Graduate College by February.

ACADEMIC YEAR, COURSE NUMBERING, REGISTRATION, ACADEMIC LOAD, AND SCHEDULE CHANGES

Academic Year. The University provides a year-round instructional program during the fall, spring, and summer terms. A wide offering of graduate courses is available to graduate students in both the fall and spring semesters, while the summer school, with its varied offering, has always been a popular time for graduate study.

Western is on a semester system; therefore, all course requirements are in terms of semester hours.

Numbering of Courses. Courses numbered from 500-699 are open only to graduate students. Courses numbered in the 400's are open primarily to seniors and graduate students and may be taken for graduate credit with the approval of the student's graduate advisor. Courses numbered in the 300's may be taken for graduate credit but only with the approval of the Graduate Dean, the department head, and the chairman of the student's advisory committee.

Registration Procedures. The process of registering for classes at Western is completed with the aid of the Computer Center. It is therefore necessary that a student wishing to register follow the designated procedures for getting a registration packet. Registration packets will be prepared automatically only for those students who were in school (either full-time or part-time) on campus the previous semester or summer term. Persons attending in the spring but not in the summer will have a packet prepared for the fall semester.

If the student is to be graduated at the end of a given semester or summer session, he must make arrangements for a registration packet according to the instructions given below.

Persons attending summer sessions only must make arrangements for a packet for each summer term. No packets will be prepared for persons taking courses the preceding semester in a Western extension.

Those students not qualifying for a packet under the above conditions will need to make the following arrangements: 1) obtain a blue Personal Data Sheet, 2) complete it, 3) mail the completed Personal Data Sheet directly to the Office of the Dean of the Graduate College.

Academic Load. Persons holding full-time teaching positions will not be permitted to enroll for more than four hours of credit during any semester. All other full-time employees are encouraged not to exceed the four-hour limit. Where exceptions are made, statements from employers must be provided to the Graduate College. Full-time graduate students may not enroll for more than fifteen hours of work in a semester or nine hours in a summer term of eight weeks. The minimum graduate load for qualifying as a full-time graduate student is nine hours per semester or six hours per eight-week summer term.

Schedule Changes. The institution reserves the privilege at all times of cancelling any course for which the enrollment is not sufficient to justify its continuation and to make any other adjustments in the schedule that seem necessary.

FOREIGN STUDENTS

Foreign students having adequate preparation for graduate study are invited to apply for admission to the Graduate College. The University is reluctant to admit a foreign student unless the department in which the student intends to study has reasonable assurance that he will succeed. In addition to general requirements and major-departmental requirements, all students from non-English speaking countries must submit evidence of adequate training in the use of English. An acceptable score on the Test of English as a Foreign Language (TOEFL) is required as a condition for admission.

(For information regarding non-academic matters, write Mr. Robert Wurster, Advisor to Foreign Students.)

GRADUATE COLLEGE

History. Western began offering the Master of Arts Degree in 1931. This program was discontinued from 1936 to 1941 but was resumed in 1941 and has enjoyed continuous growth since. The granting of University status in 1966 gave the Graduate School increased opportunity both to strengthen the present programs and to offer an even wider choice of program areas as faculty and resources are available. The name was changed in 1969 from Graduate School to Graduate College to be consistent with the other colleges in the University organization.

Organization. The Dean of the Graduate College is charged with the administration of the policies regulating and relating to graduate studies. He advises students as to the general requirements in the Graduate College and appoints a graduate advisory committee for each graduate student. He is responsible for determining and certifying to the proper University official candidates who have fulfilled requirements for advanced degrees.

The Graduate Council recommends and reviews policies pertinent to the operation of the Graduate College. In addition, it receives, reviews, and makes recommendations regarding new graduate programs and expansion of existing programs.

The Graduate Faculty consists of all persons appointed thereto in accordance with regulations established by the Board of Regents of the University. Recommendations for appointments to the Graduate Faculty are made by the Dean of the Graduate College to the Vice President for Academic Affairs from nominations received by college deans after consultation with department heads.



Individual supervision and complex instructional equipment such as this mapograph are significant components of graduate study.

Requirements for Admission:

- (1) Undergraduate degree.

Graduates of accredited four-year colleges may be ad-

mitted to graduate study. (Undergraduates within six semester hours of the Bachelor's degree at Western Kentucky University may be admitted to graduate study provided they are academically eligible for unconditional admission.)

(2) **Undergraduate point-standing.**

As a general rule, eligibility for admission is predicated upon the presentation of an undergraduate point standing of 2.5 (4.0), although some departments may require higher averages for admission to their programs. Any exception to the above policies may be made *only* by special action of the Graduate Admissions Committee concerned.

(3) **Graduate Record Examination.**

The Graduate Record Examination is required of all students entering the Graduate College. Scores are used to supplement other evidence of preparation for graduate work. These examination scores will not replace other records of achievement as a basis for admission to the Graduate College but will provide additional evidence concerning the qualification of students desiring to undertake graduate work. This examination should be taken prior to applying for admission to the Graduate College, if possible. If not, it must be taken during the first semester or summer session of graduate study.

Only the aptitude section of the Graduate Record Examination is required of most students entering degree programs; however, special examinations are required in some degree programs for admission. Minimum scores vary with the different degree programs.

Information regarding application and registration for the Graduate Record Examination may be obtained from the University Counseling Services Center, located in Room 408A of the College of Education Building.

Steps in the Student's Graduate Program

There are several major steps which the graduate student must follow in completing his Master's Degree program. At various stages the student's work is evaluated, and, upon satisfying his evaluating committee, he is permitted to advance to the next step. Failure to follow these procedural regulations may result in a delay in the completion of degree requirements. These steps are as follows:

(1) **Forms (A and A-1)—Admission to Graduate Study and Filing of Declaration of Intent.**

Application for Admission (Form A) and the Declaration of Intent (Form A-1) are filed in the office of the Dean of the Graduate College, where the student's Graduate Advisory Committee is assigned. The filing of the Declaration of Intent does not obligate the University to admit a student to a particular degree program. The University reserves the right to pursue selective procedures in the admission of students to its programs. No action regarding an application for admission will be taken until the student indicates on Form A-1 the program which he wishes to pursue.

The following procedures for securing admission to the Graduate College should be followed and completed at least four weeks prior to registration:

- a. Formally apply for admission (Forms A and A-1)
- b. Submit two official transcripts of all undergraduate and graduate work done at institutions other than this University.
- c. Complete the Graduate Record Examination either before registering for the first graduate class or during the first semester of graduate work, and have a copy of the scores placed on file in the Graduate College.

Admission to the Graduate College must be accomplished prior to the completion of the first graduate course if that course is to apply to the degree program.

(2) **Form C—Filing of the Graduate Degree Program.**

The completed graduate degree program is planned by the student in consultation with his Graduate Advisory Committee. The student should confer, by appointment, with the departmental advisor(s) assigned by the Graduate Dean. The program must be approved by the Graduate Dean and is filed in the office of the Graduate College. Any subsequent changes in the program of study must be approved by the Dean upon recommendation by the student's graduate advisor.

In planning the student's program the undergraduate record is reviewed and proper means for correcting existing deficiencies is recommended.

(3) **Form D—Admission to Candidacy.**

The student's committee reviews his qualifications and determines if he has met the requirements for consideration as a candidate for a graduate degree. The recommendation for Admission to Candidacy made by the student's Advisory Committee, certified by the Graduate Dean, and approved by the Graduate Council is based upon the student's having met the following conditions:

- a. Attained unconditional graduate standing.
- b. Completed twelve semester hours of work (at least nine hours in residence) with a 3.0 average or better.

(4) **Completion of Research Tool Requirement.**

All candidates whose degree program requires the use of a research tool must certify to the Graduate College the means being used to meet that requirement and should make proper arrangements for verification of having met the requirement.

(5) **Application for Final Examination.**

All candidates for the Master's Degree must pass either an oral or written final examination in all fields presented toward the fulfillment of requirements. Application for scheduling of the final examination should be made in the office of the Dean of the Graduate College not later than eight weeks before the date on which the degree is expected.

(6) **Degree Card—Application for the Degree.**

Application for the Master's Degree must be made in the Graduate College office at least eight weeks prior to the date upon which the degree is to be conferred. (By this time the graduation fee must have been paid at the Business Office.)

(7) **Submission of Completed Thesis.**

Students submitting a thesis as a part of their degree program must present their first draft of the thesis to their graduate committee not later than four weeks before the date on which the Master's Degree is to be conferred.

The thesis in final form must be submitted to the student's committee and the Dean of the Graduate College at least one week before the date on which the degree is to be conferred. Two copies of the approved thesis must be filed by the student

with the Dean of the Graduate College. Additional copies may be required by the department concerned.

(8) **Ordering of Cap and Gown.**

Arrangements should be made with the College Heights Bookstore for a cap and gown at the beginning of the semester in which the degree is to be conferred.

GRADUATE DEGREES AVAILABLE AT WESTERN

Western Kentucky University has been authorized to offer the following degrees: Master of Arts, Master of Arts in Education, Master of Arts in College Teaching, Master of Science, Master of Science in College Teaching, Master of Agriculture (see Agriculture), Master of Business Administration (see Business Administration), Master of Mathematics (see Mathematics), Master of Music (see Music), Master of Public Service, Master of Science in Engineering Physics.

Master of Arts degrees are offered in the following fields: Child Development and Family Living, Economics, English, Government, History, Humanities, Psychology, Sociology, and Spanish.

Master of Arts in Education degrees permit majors in the following fields: agriculture, biology, business education and office administration, chemistry, economics, education, English, English and allied language arts area, geography, German, government, history, home economics, library science, mathematics, math science area, music, physical education, psychology, science area, social science area, Spanish, and speech.

Master of Arts in College Teaching degrees are offered in Spanish and Humanities.

Master of Science degrees are offered in the following fields: agriculture, biology, chemistry, geography, mathematics, physical education, and physics.

Master of Science in College Teaching degrees are offered in biology, chemistry, geography, and mathematics.

Master of Public Service degrees are offered with options in agriculture, child development and family living, counseling, recreation and park administration, and regional development.

Other Master's Degrees such as Master of Agriculture, Master of Business Administration, Master of Mathematics, Master of Music, and Master of Science in Engineering Physics are listed in their respective departments.

GENERAL REGULATIONS AND REQUIREMENTS AFFECTING ALL MASTER'S DEGREES

Course Requirements:

- (1) At least fifty per cent of the hours required for the Master's Degree must be earned in courses open only to graduate students and applicable to the degree being pursued. Students receiving graduate credit in courses numbered below 500 will be required to complete a special assignment in addition to the regular classroom work. The assignment will be of an investigative nature and should demonstrate the ability of the student to collect and organize data.
- (2) Graduate students may not enroll for more than fifteen hours of work in a semester or nine hours in a summer term of eight weeks. The minimum graduate load for qualifying as a full-time graduate student is nine hours per semester or six hours per eight-week summer term.

Residence Requirements:

- (1) At least eighteen semester hours or the equivalent must be completed on the campus of Western Kentucky University.
- (2) All course and residence requirements for the Master's Degree must be completed within a period of eight consecutive years.

Transfer and Extension Credit:

- (1) The Graduate College regulations pertaining to the transfer of credit, extension study, and credit in residence conform to the requirements as outlined by the regional accrediting association. Graduate programs affected by additional accrediting agencies shall conform to the organization having the more restrictive regulations.
- (2) Except in cases of planned, coordinated, inter-institutional programs, not more than six semester hours of graduate credit taken on campus or through extension in a different but recognized institution may be transferred and credited to a Master's Degree. (No credit regardless of the course number will be accepted from any school that does not offer a graduate degree.)

- (3) Graduate credit not exceeding twelve semester hours may be accepted from extension study in a program under the direction of Western Kentucky University, but such credit may not be applied to reduce the minimum on-campus residence requirements.
- (4) Not more than a total of twelve semester hours of extension and transferred graduate credit may be accepted toward a Master's Degree.
- (5) No credits toward a graduate degree may be obtained by correspondence study.
- (6) The Master's Degree will not be conferred on any candidate with an average scholastic standing of less than 3.0, or B, in all graduate work undertaken. No credit will be granted for work with D grades.
- (7) No graduate credit will be allowed for excess undergraduate work or work done as a special post-graduate student.

Conditions for Continuation in the Program:

A graduate student who fails to make a satisfactory academic record may be refused permission to continue in a degree program. Failure to maintain a grade-point average of 2.5 on all work taken during any semester or summer session may be regarded as sufficient reason for dismissal from a degree program. A student may be dropped from a degree program if his cumulative average is below 3.0 for two consecutive semesters or summer sessions.

Examinations: In addition to course examinations, all candidates for the Master's Degree must pass a final examination covering the thesis and/or major and minor fields of study. This examination may be either written or oral and shall be conducted by a special committee appointed by the Dean of the Graduate College. In a program requiring a thesis, the final examination must be preceded by the tentative approval of the candidate's thesis by his Advisory Committee.

The Master's Degree shall be granted only upon the recommendation of the Examining Committee, and by vote of the Graduate Council, and shall be conferred only at the regular commencements of the Institution.

Procedures for changing from one graduate degree program to another:

A student changing from one graduate degree program to another will:

- (1) Be required to satisfy the admissions requirements of the new program if they differ from those of the previous program.
- (2) Be required to satisfy all requirements for the new program except as indicated below.
- (3) Be allowed to use all applicable courses if the change is made before the halfway point, or if the change is made after the halfway point but before the program is completed, the student's advisor will work out with him the coursework from the previous program which will be accepted.

Guidelines for obtaining a second Master's Degree:

A student pursuing a second Master's Degree from Western Kentucky University will:

- (1) Be required to satisfy admissions requirements of the new degree if it differs from the previous one.
- (2) Be required to satisfy all requirements for the new program except as indicated below.
- (3) Be required to earn a minimum of twelve hours of new course work toward the degree.
- (4) Write a thesis or satisfy any option used in lieu of a thesis (six additional hours).

**GENERAL OUTLINE OF REQUIREMENTS
FOR GRADUATE DEGREES****General Requirements for the Master of Arts Degree:**

Admission: In addition to the requirement of a good standing admission to the Graduate College, the student must submit at least a minor or its equivalent in the department in which he intends to study with a point standing of approximately 2.7 (some departments require a 3.0). A satisfactory score on the Graduate Record Examination is also required.

Coursework: A total of thirty hours is required with no more than six of the thirty being credit given for the thesis.

Research Tool: The student may meet the research tool requirement by either: (1) demonstrating a reading ability sufficient to do scholarly research in a foreign language appropriate to his major area, or (2) demonstrating that he has mastered appropriate research techniques that have been recommended by his departmental advisor(s) and approved by the Dean of the Graduate College.

Thesis: A thesis on a topic approved by the student's advisor and the head of the department is required. The thesis must conform to basic research and must indicate evidence of a judicious use of source materials.

Final Examination: A final examination over courses, thesis, and related materials must be satisfactorily passed.

General Requirements for the Master of Arts in Education Degree:

All candidates for the Master of Arts degree in Education must meet state requirements for certification in the appropriate area. The requirements for the degree and for certification must be satisfied by either Plan I (with a thesis) or by Plan II (without a thesis).

Admission: The student following either Plan I or Plan II must be admitted to the Graduate College in good standing.

Coursework: All candidates for the degree under Plan I must present a minimum of thirty semester hours of graduate credit, twenty-four of which must be in course work. All candidates for the degree under Plan II must present a minimum of thirty hours of course work. In both Plans I and II at least nine hours (exclusive of credit for research) must be in professional education. The candidate must have no fewer than twenty-nine semester hours of credit in professional education at the undergraduate and/or graduate level. The remainder of the coursework required for the degree will be determined by the University in terms of the needs of the student, provided that it shall be in graduate courses.

All candidates must have a major and a minor. The student may choose to take a minimum of nine hours or a maximum of eighteen hours in Education and a minimum of twelve or a maximum of twenty-one hours in a subject-matter area.

Research Tool: Students under this degree program are not required to demonstrate proficiency in a research tool.

Thesis: Students under Plan I must register for research credit to a maximum of six semester hours in his major field. Research culminating in the writing of a satisfactory thesis upon some problem approved by the student's Graduate Advisory Committee is required. Students under Plan II may substitute six hours of coursework for the thesis, thus making a total of thirty semester hours of coursework.

Final Examination: A final examination over courses, thesis (if chosen), and related materials must be satisfactorily passed. In some areas a written examination is required.

General Requirements for the Master of Arts in College Teaching Degree:

Admission: In addition to the requirements of a good standing admission to the Graduate College, the student must submit at least a major or minor in the department in which he intends to study with a minimum point standing of 2.7 (4.0). Some departments require a 3.0.

Coursework: Twenty-four semester hours are required if the thesis option is taken, while thirty semester hours are required if the thesis option is not taken.

Research Tool: The student may meet the research tool requirement by either: (1) demonstrating a reading ability sufficient to do scholarly research in a foreign language appropriate to his major area, or (2) demonstrating that he has mastered appropriate research techniques that have been recommended by his departmental advisor(s) and approved by the Dean of the Graduate College.

Thesis: The thesis is optional.

Teaching: Since the emphasis in this degree is for preparation to teach in junior colleges or at the lower levels of senior colleges, the student must do some supervised college teaching under the direction of a member of the department involved.

Final Examination: A final examination over courses, thesis (if chosen), and related materials must be satisfactorily passed.

General Requirements for the Master of Science Degree:

Admission: In addition to the requirement of a good standing admission to the Graduate College, the student must submit at least a major or minor in the department in which the student intends to study with a point standing of at least 2.7 (4.0). Some departments require a 3.0.

Coursework: A minimum of twenty-four hours is required (in addition to the six hours given for the thesis), six of which may be in a related field or fields approved by the major department involved.

Research Tool: The student may meet the research tool requirement by either: (1) demonstrating reading ability sufficient to do scholarly research in a foreign language appropriate to his major area; or (2) demonstrating that he has mastered appropriate research techniques that have been recommended by his departmental advisor(s) and approved by the Dean of the Graduate College.

Thesis: A thesis on a topic approved by the student's advisor and the head of the department is required. The thesis must conform to basic research and must indicate evidence of a judicious use of source materials.

Final Examination: A final examination over courses, thesis, and related materials must be satisfactorily passed.

General Requirements for the Master of Science in College Teaching Degree:

Admission: In addition to the requirement of a good standing admission to the Graduate College, the student must submit at least a major or minor in the department in which he intends to study with a minimum point standing of 2.7 (4.0). Some departments require a 3.0.

Coursework: A minimum of 24 semester hours is required if the thesis option is taken; a minimum of 30 semester hours is required if the thesis option is not taken.

Research Tool: The student may meet the research tool requirement by either: (1) demonstrating a reading ability sufficient to do scholarly research in a foreign language appropriate to his major area, or (2) demonstrating that he has

mastered appropriate research techniques that have been recommended by his departmental advisor(s) and approved by the Dean of the Graduate College.

Thesis: The thesis is optional.

Specialized Degrees: The specialized degrees such as the Master of Agriculture, Master of Business Administration, Master of Mathematics, Master of Science in Engineering Physics and Master of Music are located in their respective departments.

AREAS OF STUDY

ACCOUNTING

Accounting is an integral part of the Master of Business Administration curriculum. In addition, graduate courses in accounting are significant supporting areas in other graduate programs.

Graduate Courses

518. Investigations in Accounting. Three hours.

Designed primarily for secondary education teachers of bookkeeping. Provides an updating of terminology and practice in accounting.

560. Controllership. Three hours.

An examination of the control function in corporate enterprise. Accounting and financial control concepts and techniques as applied to current and long-term assets are emphasized. Control measures for production and marketing decisions are examined in terms of their financial consequences. Risk and uncertainty in the decision-making process are considered briefly.

The following 400-level courses may be taken for graduate credit:

420. Managerial Cost Analysis. Three hours.

Prerequisite: Accounting 310.

421. Advanced Tax Accounting. Three hours.

Prerequisite: Accounting 311.

422. Advanced Accounting. Three hours.

Prerequisite: Accounting 219.

423. Advanced Accounting Theory. Three hours.

Prerequisite: Accounting 218.

431. Auditing. Three hours.

Prerequisite: Accounting 422 or 423.

AGRICULTURE

Master of Agriculture; Master of Science in Agriculture; Master of Arts in Education (Agriculture major or minor); Master of Public Service (Agriculture option)

Master of Agriculture.

This program is designed for those students who desire additional training in agriculture or agriculturally-related professions. Students who expect to continue graduate work toward an advanced degree should pursue the Master of Science degree with a major in Agriculture.

Admission and other requirements are the same as those for the Master of Science degree except that no thesis or research tool is required. Students shall complete six hours of coursework in lieu of the thesis.

Master of Science in Agriculture.

Applicants for this degree should have an undergraduate major in agriculture or related science. A minimum of thirty hours of approved graduate coursework including a maximum of six hours of thesis credit for a suitable thesis must be earned. The thesis shall consist of the report of the findings of an approved research project conducted under the direction of the student's Graduate Advisory Committee.

There shall be no language requirement for this degree, but the student must satisfy the research tool requirement by demonstrating competency in research techniques as recommended by his Graduate Committee and approved by the Dean of the Graduate College.

Master of Arts in Education (Agriculture major or minor)

This program provides additional graduate coursework in agriculture while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student majoring in agriculture shall take a minimum of 18 hours, and the student minoring in agriculture shall take a minimum of 12 hours in agriculture and related areas as designated by the Graduate Advisory Committee. A minimum of 9 hours of approved coursework will be taken in professional Education.

Master of Public Service (Agriculture Option)

This interdisciplinary degree program is designed for students with an undergraduate degree in agriculture or a closely related area and

who expect to work in areas of public service. For specific requirements see Master of Public Service Degree, p. 123.

Graduate Courses in Agriculture:

- 514. Advanced Plant Breeding. Three hours.**
Prerequisites: Agriculture 414 and 491 or consent of instructor. Problems and methods of improvement of cereal, forage, fiber, vegetables and other crop species, pathological and physiological relationships. Lecture and recitation, three hours.
- 529. Quantitative Genetics. Three hours.**
Prerequisites: Agriculture 491, Biology 327 or consent of instructor. Genetic and biometric principles underlying genetic characters which exhibit continuous variation. Lecture three hours.
- 533. Physiology of Lactation. Three hours.**
Prerequisites: Agriculture 243, 330 or Biology 430 or consent of instructor.
Anatomy of the mammary gland, hormonal control of mammogenesis, initiation and maintenance of milk secretion, factors affecting level and composition of milk, synthesis of milk, physiology and mechanics of the milking process. Lecture, two hours; laboratory, two hours.
- 545. Ruminant Nutrition. Three hours.**
Prerequisites: Ag. 448, Biology 446 or equivalent, or consent of instructor.
Rumen development and function, products of fermentation, nutrient requirements, absorption and metabolism, symptoms of deficiency and toxicity, basic principles of ruminant nutrition and their application to the production of milk, meat and wool. Lecture, three hours.
- 546. Advanced Animal Breeding. Three hours.**
Prerequisites: Agriculture 446 and 428 or consent of instructor.
Application of population genetics to the economic improvement of farm animals, phenotypic and genetic relationships, selection aids and role of selection in changing populations, systems of mating, formulation and application of breeding plans. Lecture, two hours; laboratory, two hours.
- 547. Advanced Animal Nutrition. Three hours.**
Prerequisites: Agriculture 448, Biology 446 or equivalent, or consent of instructor.
A study of the individual nutrient requirements of monogastric animals, structure, metabolism and function of each nutrient class, interrelationship of nutrient classes, deficiency and toxicity symptoms, practical application to current nutritional problems. Lecture, three hours.
- 550. Advanced Soil Chemistry. Three hours.**
Prerequisites: Ag. 450, Chemistry 212 and 230 or consent of instructor. Chemical and mineralogical properties of soil colloids; ion exchange and soil reaction; nature of soil organic matter and biochemical transformations. Lecture, two hours; laboratory, two hours.
- 551. Advanced Soil Fertility. Three hours.**
Prerequisites: Agriculture 351 or consent of instructor.
Evaluation of soil fertility and fertilizers, theory and application; soil-plant relationships; composition and properties of soil in relation to ion uptake, nutrition and growth of plants. Lecture, three hours.
- 553. Soil Genesis, Morphology and Classification. Three hours.**
Prerequisites: Ag. 453 and Geology 111 or consent of instructor.
Genesis and morphology of soils as related to classification systems; functional analysis of soil characteristics, categories, genetics and interrelationships; geographical distribution of soils of the world. Lecture, two hours; laboratory, two hours.
- 561. Agricultural Production Economics. Three hours.**
An economic analysis of agricultural production including production functions, cost functions, programming and decision-making principles, and the application of these principles of resource allocation in Agriculture. Lecture, three hours.
- 583. Curriculum Development and Determining Content in Vocational Agriculture. Three hours.**
For beginning teachers of Vocational Agriculture who have a teaching contract.
- 589. Special Problems in Agriculture Education. One to three hours.**
Prerequisites: Student teaching completed or concurrent.
Supervised individual study in selected fields of vocational agriculture education. May be repeated to a maximum of six hours.
- 590. Experimental Design and Data Analysis. Three hours.**
Prerequisite: Agriculture 491 or consent of instructor.
Statistical considerations in design of experiments; covariance, multiple regression, factorial experiments, individual degrees of freedom, incomplete block designs, experiments repeated over space and time; tests of reliability, significance and confidence levels. Lecture, three hours.
- 598. Seminar. One hour.**
Reports and discussion of problems and research in agriculture. Required of all graduate students, may be repeated to a maximum of three credits.
- 599. Special Problems in Agriculture. One to three hours.**
Prerequisite: Graduate standing and permission of the instructor.
Supervised individual study in selected fields of agriculture. May be repeated to a maximum of nine credits.

675. **Advanced Topics in Agriculture. One to three hours.**
Prerequisites: Graduate standing and permission of the instructor.
Special topics to acquaint the advanced student with the more significant problems and scientific developments of current interest in agriculture. Special topic titles assigned. Lecture and assignments variable with credit. May be repeated to a maximum of ten credits. May be repeated with change in title and content.

699. **Research. One to six hours.**
Prerequisite: Consent of graduate advisor.
Directed research on approved projects investigating selected fields of agriculture. May be repeated with permission.

The following 400-level courses may be taken for graduate credit:

- 400. **Plant Physiology. Three hours.**
- 412. **Modern Fruit Production. Three hours.**
- 413. **Plant Propagation. Three hours.**
- 414. **Plant Breeding. Three hours.**
- 416. **Plant Taxonomy. Three hours.**
- 418. **Ornamental Horticulture and Landscape Design. Three hours.**
- 421. **Forage, Turf, and Specialty Crops. Four hours.**
- 422. **Grain and Oilseed Crops. Three hours.**
- 428. **Population Genetics. Three hours.**
- 430. **Dairy Technology. Three hours.**
- 438. **Dairy Microbiology. Four hours.**
- 443. **Physiology of Reproduction in Domestic Animals. Three hours.**
- 446. **Animal Breeding. Three hours.**
- 448. **Principles of Animal Nutrition. Three hours.**
- 449. **Laboratory Methods and Techniques in Animal Nutrition. Three hours.**
- 450. **Soil Chemistry. Three hours.**
- 452. **Soil Microbiology. Four hours.**
- 453. **Soil Formation, Classification and Mapping. Three hours.**
- 454. **Land-Use and Conservation. Three hours.**
- 455. **Soil Physics. Three hours.**
- 460. **Agricultural Policy. Three hours.**
- 461. **Advanced Farm Management. Three hours.**

463. **Agricultural Finance. Three hours.**

475. **Selected Topics in Agriculture. One to three hours.**

488. **Young Farmer and Adult Education in Agriculture. Four hours.**

489. **Special Problems in Agricultural Education. One to three hours.**

491. **Data Analysis and Interpretation. Three hours.**

ART

Master of Arts in Education (Art minor)

This program provides additional graduate coursework in art while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student minoring in art may take as few as 12 hours and as many as 15 hours in art while the remaining hours are to be taken in professional education.

Art areas from which courses may be selected include art education, art history, and studios. No studio area may be selected if the student has not had undergraduate experience in it.

Graduate Courses in Art:

500. **History of Architecture and Sculpture. Three hours.**

A study which attempts to build through investigation upon the student's general background knowledge of art history. Art history 312 or its equivalent is a prerequisite.

501. **History of Painting. Three hours.**

A study which attempts to build through investigation upon the student's general background knowledge of art history. Art History 323 or its equivalent is a prerequisite.

511. **Investigations in Art Education. Three hours.**

Both Art 511 and 512 are designed specifically to direct the student deeply into the literature of this field and are entirely research in nature.

512. **Investigations in Art Education. Three hours.**

Art Education 511 is a prerequisite.

The following 400-level courses may be taken for graduate credit:

- 420, 421, 422 Ceramics
- 450, 451, 452 Printmaking
- 460, 461, 462 Painting
- 470, 471, 472 Sculpture
- 480, 481, 482 Weaving

BIOLOGY

Master of Science in Biology; Master of Science in College Teaching in Biology; Master of Arts in Education (Biology major or minor).

Master of Science in Biology

Admission to the M.S. in Biology program typically requires the equivalent of an undergraduate major in biology including two laboratory courses each in inorganic chemistry and physics and one course in organic chemistry.

A candidate for the M.S. in Biology must complete at least thirty semester hours of coursework. A maximum of six hours in Thesis Research (Biology 699) may be applied toward this degree.

The thesis, which is required for the M.S. in Biology, is based upon original research performed under the direction of a member of the Graduate Faculty within the Department of Biology.

A research tool, the exact nature of which is decided by the candidate's graduate advisory committee with approval of the Dean of the Graduate College, is required. Examples of a research tool are the demonstration of a reading knowledge of a foreign language or competency in statistical methodology or computer programming.

Master of Science in College Teaching in Biology

The M.S.C.T. in Biology program is designed especially for the preparation of community and junior college instructors.

Admission and research tool requirements for the M.S.C.T. are the same as those previously outlined for the M.S. in Biology.

A candidate for the M.S.C.T. in Biology must complete at least thirty semester hours of which a minimum of twenty-four hours must be in biology courses. The remaining credit hours may be selected from graduate level professional education courses or from the graduate offerings of other departments. Although a thesis is not required and credit in Biology 699 is not allowed, M.S.C.T. candidates are required to take one to three hours of Investigations in Biology (Biology 516) as an introduction to research.

All M.S.C.T. candidates are required to have teaching experience as a non-credit part of their program. This requirement is usually met by supervised instruction in a general biology laboratory.

Master of Arts in Education (Biology major or minor)

This program is designed especially for the preparation and strengthening of secondary school science teachers. Students pursuing this program should confer closely with their advisors in the Department of Secondary Education.

To qualify for a subject-matter major in biology, the M.A. in Education student must complete a minimum of twelve hours of coursework in biology (the remaining six hours may be taken in biology or in a related subject-matter area). The student in the M.A. in Education program getting a major in an allied subject-matter area may qualify for a minor in biology with the completion of a minimum of eight hours of coursework in biology.

Students who desire a breadth of coursework in the sciences may major in the Science Area of Concentration under the M.A. in Education program. The courses in biology these students take must be approved by their advisor in the Science Area (Dr. Ernest O. Beal) and their advisor in the Department of Secondary Education.

Graduate Courses in Biology:

505. Biogeography. Three hours.

See Department of Geography and Geology.

511. Limnology. Four hours.

Prerequisites: Biology 151, 152.

A study of the physical, chemical, and biological aspects of bodies of freshwater with emphasis on water as a biological environment. (Lecture, three hours; laboratory, two hours.) Offered fall, '72 and alternate years.

514. Advanced Plant Breeding. Three hours.

See Department of Agriculture.

515. Plant Ecology. Four hours.

Prerequisites: Biology 151 and consent of instructor.

A study of ecological concepts and their application to experimental approaches for studying the interaction of plants with their environment. Emphasis will be on population studies involving biochemical, physiological, and phenological approaches. Lecture, two hours; laboratory, four hours. (Offered spring, '72 and alternate years.)

516. Investigations in Biology. One to three hours.

Prerequisite: Consent of research project director.

A study for graduate students involving a research project under faculty supervision (not applicable to M.S. candidates in Biology). (Offered every semester and summer).

- 520. Aquatic Vascular Plants. Four hours.**
Prerequisite: Biology 151.
A study of the higher plants of aquatic and marsh habitats: their collection and identification, association of species, adaptations to the aquatic environment, and ecological factors limiting their distribution. Lecture, two hours; laboratory, four hours. (Offered summer '71 and alternate years).
- 527. Advanced Genetics. Four hours.**
Prerequisite: Biology 327.
A study of advanced Mendelian principles and post-Mendelian genetics with emphasis on recently developing areas of research. Lecture, two hours; laboratory, four hours. (Offered fall '71, summer '72 and alternate years).
- 539. Phytoplankton Ecology. Three hours.**
Prerequisite: Biology 438 or consent of instructor.
A qualitative-quantitative study of freshwater phytoplankton communities with an emphasis on seasonal periodicity, distribution, and succession. Lecture, one hour; laboratory, four hours. (Offered summers, on demand).
- 540. Principles and Concepts of Biology. Three hours.**
A study of the principles and concepts of biology with emphasis on physiological aspects of both plants and animals (NSF Institute course). Lecture, two hours; laboratory, two hours.
- 541. Microbiology. Three hours.**
A basic study of microbiology for teachers; includes a study of bacteria and single-celled animals and plants (NSF Institute course). Lecture, two hours; laboratory, two hours.
- 550. Aquatic Invertebrates. Three hours.**
Prerequisite: Biology 408 or consent of instructor.
A study of the taxonomy and ecology of invertebrates in lakes, ponds, and streams. Lecture, one hour; laboratory, four hours. (Offered summers, on demand).
- 552. Experimental Physiology. Four hours.**
Prerequisites: Biology 330 and 432.
A study of the various systems of the vertebrate from an experimental standpoint. Experimental procedures will be used to induce variations from normal function and the results studied. Special emphasis will be placed on the control systems and homeostatic mechanisms of the body. Lecture, two hours; laboratory, four hours. (Offered on demand).
- 556. Experimental Embryology. Four hours.**
Prerequisites: Biology 148, 323, and Biochemistry.
A study of gametogenesis, fertilization, and embryonic differentiation from an experimental approach. Special emphasis will be placed on the roles that metabolism, polarity, and gene action play in the de-

velopment of vertebrate and invertebrate eggs and embryos. Lecture, two hours; laboratory, four hours. (Offered on demand).

- 558. Advanced Ornithology. Four hours.**
Prerequisites: Biology 152, 326 or consent of instructor.
An advanced study of birds stressing systematics, ecology, and behavior. Lecture, two hours; laboratory, four hours. (Offered on demand).
- 560. Advanced Parasitology. Four hours.**
Prerequisite: Biology 460.
An intensive study on the culture, determination of physiological requirements, experimental infection of hosts, and host-specificity of parasites. Lecture, two hours; laboratory, four hours. (Offered on demand).
- 562. Intermediary Metabolism. Three hours.**
See Department of Chemistry.
- 570. Immunology. Four hours.**
Prerequisites: Biology 210, 211, and Biochemistry.
A study of the mechanisms of non-specific and specific resistance to infectious diseases, hypersensitivities, anaphylaxis, autoimmunity, and blood groups. Lecture, two hours; laboratory, four hours. (Offered spring '71 and alternate years).
- 580. Plant Biochemistry. Three hours.**
Prerequisite: Chemistry 314 or 342.
A study involving the occurrence, properties, function, and metabolism of many organic compounds found in plants; includes a detailed study of enzymes, carbohydrates, plant pigments, photosynthesis, nitrogen metabolism, and plant growth regulators. Lecture, three hours. (Offered summer '71 and alternate years).
- 581. Advanced Plant Taxonomy. Four hours.**
Prerequisite: Biology 416.
The dynamic application of taxonomic methods and principles. Emphasis will be upon obtaining and utilizing taxonomic data, the comparative study of major classification systems, plant nomenclature, variation and evolution, and revisionary and monographic research techniques. Lecture, two hours; laboratory, four hours. (Offered on demand).
- 591. Aquatic Biology. Four hours.**
Prerequisite: Consent of instructor.
A detailed study of the techniques of acquisition and analysis of limnological data. Lecture, one hour; laboratory, six hours. (Offered spring semesters).
- 598. Graduate Seminar. One hour.**
A study of special topics in Biology with participation by students. (Offered every semester).

675. Advanced Topics in Biology. One to three hours.

A course of study at the graduate level to cover special or selected topics in Biology. (Offered on demand).

699. Thesis Research. One to six hours.

A course in which the graduate student is directly engaged in research leading to completion of the thesis requirement for the M.S. in Biology degree. The course consists of the individual direction of the student's research by the graduate advisor. (Offered every semester and summer).

The following 400-level courses may be taken for graduate credit:

400. Plant Physiology. Three hours.

Prerequisites: Biology 151 and two semesters of Chemistry. (Offered fall semesters).

404. Techniques and Theory of Electron Microscopy. Three hours.

Prerequisite: Senior or graduate standing; others will be considered on an individual basis with consent of instructor. (Offered every semester).

405. Paleontology. Four hours.

See Department of Geography and Geology.

407. Virology. Three hours.

Prerequisite: Biology 210. (Offered spring '72 and alternate years).

408. Invertebrate Zoology. Four hours.

Prerequisite: Biology 152. (Offered fall semesters).

411. Cell Biology. Three hours.

Prerequisites: Biology 148, 149, and Organic Chemistry. (Offered every semester and summer).

412. Cell Biology Laboratory. One hour.

Corequisite or Prerequisite: Biology 411.

414. Plant Breeding. Three hours.

See Department of Agriculture.

416. Plant Taxonomy. Four hours.

Prerequisite: Biology 151. (Offered spring semesters and summers.)

418. Mycology. Four hours.

Prerequisite: Biology 151. (Offered fall '72 and alternate years).

428. Population Genetics. Three hours.

See Department of Agriculture.

432. Advanced Animal Physiology. Three hours.

Prerequisites: Biology 330, 331. (Offered spring semesters.)

435. Biological Instrumentation. Three hours.

Prerequisites: Biology 148, two courses each in Chemistry and Physics. (Offered on demand.)

438. Phycology. Four hours.

Prerequisite: Biology 151. (Offered fall '72 and alternate years).

446. Biochemistry. Three hours.

Prerequisites: Chemistry 314, 340. (Offered every semester.)

447. Biochemistry Laboratory. One hour.

Corequisite or Prerequisite: Biology 446. (Offered every semester.)

451. Protozoology. Four hours.

Prerequisite: Biology 152. (Offered fall '71 and alternate years).

456. Ichthyology. Four hours.

Prerequisites: Twelve hours of Biology. (Offered fall semesters.)

457. Herpetology. Four hours.

Prerequisite: Biology 152. (Offered spring '71 and alternate years).

459. Mammalogy. Four hours.

Prerequisite: Biology 152. (Offered on demand.)

460. Parasitology. Four hours.

Prerequisite: Biology 152. (Offered fall semesters.)

464. Endocrinology. Four hours.

Prerequisite: Biology 330. (Offered spring '72 and alternate years).

470. Pathogenic Microbiology. Four hours.

Prerequisite: Biology 210. (Offered fall '72 and alternate years).

472. Food Microbiology. Four hours.

Prerequisites: Biology 210, 211, or consent of instructor. (Offered spring '72 and alternate years).

475. Selected Topics in Biology. One to three hours.

Prerequisite: consent of instructor. (Offered every semester.)

477. Morphology of Non-Vascular Plants. Four hours.

Prerequisite: Biology 151. (Offered spring '71 and alternate years).

478. Morphology of Vascular Plants. Four hours.

Prerequisite: Biology 151. (Offered fall '72 and alternate years).

491. Data Analysis and Interpretation. Three hours.

See Department of Agriculture.

495. Marine Biology. Four hours.

Prerequisites: Biology 151, 152. (Offered on demand.)

BUSINESS ADMINISTRATION

Master of Business Administration

The program is designed to provide professional education for successful careers in management. It is general in approach and emphasizes the relevance of economics, quantitative methods and the behavioral sciences.

Admission to the program requires the approval of the Graduate College and the Master of Business Administration Admissions Committee. Applicants will be evaluated on the basis of their academic records, professional experience, and scores on the Admission Test for Graduate Study in Business (ATGSB). The ATGSB scores must be submitted prior to admission. ATGSB registration forms and information bulletins can be obtained by contacting the University Counseling Services Center in the College of Education Building at Western or by writing to Educational Testing Service, Princeton, New Jersey, 08540.

The following courses or their academic equivalents are program prerequisites: Price Theory (Economics 320), Macroeconomic Analysis (Economics 325), Statistical Analysis for Economics and Business (Economics 306), Financial Statement Analysis (Accounting 460), Principles of Marketing (Business Administration 320), and Financing Business (Business Administration 330).

A minimum academic average of 3.0 (4.0) must be achieved in these courses. Normally, students lacking more than six hours of prerequisite work will not be admitted to a graduate course.

The M.B.A. program requires the student to complete thirty semester hours of approved graduate course work including a significant paper in an area of special interest to him, or twenty-four hours of such course work and a thesis. All students are required to complete the following twenty-four hour core:

Accounting 560. Controllorship (see description under **Accounting**).

Bus. Ad. 500. Business, Government, and Law.

Bus. Ad. 510. Organization Theory.

Bus. Ad. 513. Production and Operations Management.

Bus. Ad. 520. Advanced Marketing.

Bus. Ad. 530. Finance and Valuation of Corporations.

Econ. 520. Advanced Microeconomic Theory (see description under **Economics**).

Econ. 525. Advanced Macroeconomic Theory (see description under **Economics**).

Evening classes are available for those wishing to pursue the degree on a part-time basis.

Graduate Courses in Business Administration:

500. Business, Government and Law. Three hours.

A study of the legal process as it relates to business. Topics discussed include the concepts of contract and property, and public policies regarding the regulation of trade and control of monopolies.

503. International Business. Three hours.

A broad survey of the institutions, organizations, and procedures of international business.

510. Organization Theory. Three hours.

Investigation of analytical concepts and models derived from the classical, behavioral, decision-making, and systems approaches to the study of administrative organization.

511. Management Science I. Three hours.

Basic quantitative models used in business with emphasis on capital budgeting decision making. The calculus and application of the optimization of functions of both one and two-decision variables. Applications include the problem of earning functions, diffusion models incorporating growth and advertising and investment decisions in the Holt, Modigliani, Muth model.

512. Management Science II. Three hours.

The mathematics and application of linear systems. Linear programming, the warehouse, transportation and assignment problems. The optimization of many variables. General techniques for optimizing under inequality constraints. The mathematics and application of quadratic forms and dynamic programming.

513. Production and Operations Management. Three hours.

The course presents an organized body of knowledge concerning the design, operation and control of production systems. It draws upon the mathematical, physical and behavioral sciences in developing generalized decision rules for the integration of men, machines and material into functioning systems.

520. Advanced Marketing. Three hours.

Intensive analytical study of important aspects of marketing principles, institutions, policies, and operations. This course presents information from the quantitative and behavioral sciences which is important to understanding the theory, philosophy, and operation of integrated marketing systems.

530. Finance and Valuation of Corporations. Three hours.

Prerequisite: Bus. Ad. 330. An examination of the financing policies of corporate enterprises. Planning the capital structure, measuring and controlling the costs of alternative sources of funds, dividend policy, and growth through mergers and business acquisitions are emphasized.

The following 400-level courses may be taken for graduate credit with the approval of the M.B.A. Advisor:

Bus. Ad. 442. Management Systems. Three hours.

Economics 460. Business Cycles. Three hours.

Economics 465. Introduction to Econometrics. Three hours.

Mathematics 470. Introduction to Operations Research. Three hours.

BUSINESS EDUCATION AND OFFICE ADMINISTRATION

Master of Arts in Education (Business Education and Office Administration major or minor).

The student majoring in Bus. Ed. and Off. Adm. may take a minimum of 18 and a maximum of 21 hours in that department, and the student minoring in business education and office administration may take a minimum of 12 hours and a maximum of 15 hours in that department.

Graduate Courses in Business Education and Office Administration:

525. Modern Stenographic Techniques. Three hours.

Provides symbol shorthand teachers with touch shorthand theory. Teaching methods and development of the basic speed on the stenograph.

530. Modern Data Processing. Three hours.

An introduction to the field of electronic data processing, its hardware, languages, and applications.

535. Survey of Distribution. Three hours.

A survey embracing all business activities involved in moving goods from production to consumption. Emphasis is given to developing a philosophy of the role of marketing in the American economy.

540. Consumer Financial Problems. Three hours.

A presentation of eight basic elements of money management and a conceptual relationship of these elements to family units and corporate citizenship.

544. Current Problems in Business Education. Two to six hours.

Course to be taught either as independent study, workshops, or in regularly organized classes. Current problems in business education and significant research related to such problems will form the basis of this course.

545. Principles of Business Education. Three hours.

Advanced study of principles, practices, and problems in business education with special reference to the needs and trends in this field. Topics emphasized include standards; guidance; job placement and follow-up; equipment; supervision; and business curricula of the secondary school, the private business school, the junior college, and the collegiate school of business.

550. Contemporary Office Administration Problems. Three hours.

Prerequisite: Business Education 462 or permission of instructor.

Examination, in depth, of basic problems in office administration through individual and group analysis and presentation of case problems and current literature; problems areas covered include: office systems analysis and design, office procedures and methods, office cost control, office personnel, office environmental factors, and office automation.

575. Administration and Supervision in Business Education. Three hours.

Study of the roles and functions of administration and supervision in business education on the high school level, city level, and state level, and in colleges and universities.

The following 400-level courses may be taken for graduate credit:

461. Report Writing. Three hours.

462. Office Management. Three hours.

463. Records Management. Three hours.

Prerequisite: Business Education 241.

CHEMISTRY

Master of Science in Chemistry; Master of Science in College Teaching in Chemistry; Master of Arts in Education (Chemistry major or minor).

Master of Science in Chemistry

Candidates for admission to this program in chemistry must submit evidence of satisfactory completion of undergraduate curricula in chemistry. Graduates of American colleges and universities are urged to submit, at the time of application, test scores from the Graduate Record Examination Advanced Test in Chemistry and the Graduate Record Examination Aptitude Test. Students admitted without these test scores should take them during their first semester on campus. Graduates of foreign colleges and universities are required to submit test scores from

Graduate Record Exam (Aptitude Test), Graduate Record Exam (Advanced Test in Chemistry), and the Test of English as a Foreign Language (TOEFL) as a part of their applications for admission to graduate studies in chemistry.

At the beginning of each semester the Department administers a series of entrance examinations to all incoming graduate students in chemistry. These examinations cover the areas of undergraduate instruction in analytical, inorganic, organic, and physical chemistry. Students whose test scores indicate weakness in one or more areas will be required to complete satisfactorily the appropriate undergraduate courses (for no graduate credit).

Graduate course requirements for the M.S. degree in chemistry constitute a minimum of twenty-four hours of coursework other than research, including one course acceptable for graduate credit in each of four of the five major areas of chemistry: analytical, inorganic, organic and physical chemistry, and biochemistry. Students electing biochemistry must take or have taken Chem. 460 and 461 or equivalent to satisfy this requirement. In addition, Chem. 435 is required of all students who have not submitted evidence of successful completion as an undergraduate of an instrumental methods course. All graduate students will take Chem. 598 (seminar) each semester; the one credit hour for this course will be counted only once.

Candidates for the M.S. degree in chemistry will be expected to take at least eighteen of their twenty-four hours of coursework within the Department of Chemistry. (However, a student wishing to pursue an interdisciplinary program of study may obtain permission from the Head of the Department of Chemistry to take less than eighteen hours in chemistry, provided that the "outside" coursework is in an allied science and that all other departmental requirements are met.) At least half of all chemistry credit hours earned in coursework shall be obtained in courses numbered above 500. M.S. candidates must maintain a grade point average of at least 3.00 in their chemistry courses in order to remain in good academic standing.

The thesis, which is required for the M.S. degree in Chemistry, is based upon the results of an experimental laboratory investigation performed under the direction of a member of the Graduate Faculty within the Department of Chemistry.

The ability to translate a modern foreign language (restricted to German, Russian, or French) must be demonstrated. The determination

of language competence is made by the Department of Foreign Languages as specified by the office of the Graduate College.

Master of Science in College Teaching in Chemistry

The Master of Science in College Teaching (M.S.C.T.) program is designed especially for the preparation of community college and junior college instructors. Admission requirements and entrance examinations are the same as those for M.S. degree candidates.

Candidates for the M.S.C.T. degree are expected to complete a minimum of eighteen hours of graduate coursework in chemistry if no thesis is undertaken, or a minimum of fifteen hours graduate coursework in chemistry if a thesis is elected. Chemistry coursework will include Chem. 435, unless an equivalent course has been completed satisfactorily, and at least one graduate level course in each of the areas of analytical, inorganic, organic, and physical chemistry. M.S.C.T. candidates will also take Chem. 570, and will be expected to complete a program of supervised college teaching.

Students in the M.S.C.T. program must meet research tool requirements as stipulated by and acceptable to the student's graduate advisor and the Dean of the Graduate College.

M.S.C.T. candidates have the option of completing a research project and submitting a thesis in the area of chemical education, along with a total of twenty-four hours of graduate coursework, or of electing to complete thirty hours of graduate coursework with no thesis. At least half of all hours earned in chemistry coursework shall be in courses numbered above 500.

Master of Arts in Education (Chemistry major or minor)

This program is designed especially for the preparation and strengthening of secondary school science teachers. Students pursuing this program should confer closely with their advisors in the Department of Secondary Education.

To qualify for a subject-matter major in chemistry, the M.A. in Education student must complete a minimum of 12 hours of coursework in chemistry (the remaining 6 hours may be taken in chemistry or in a related subject-matter area). The student in the M.A. in Education program getting a major in an allied subject-matter area may qualify for a minor in chemistry with the completion of a minimum of 8 hours of coursework in chemistry. Students who have not previously com-

pleted a year of physical chemistry are strongly urged to take Chemistry 350 and 352, which may be counted for credit toward the M.A. in Education degree.

Students who desire a breadth of coursework in the sciences may major in the Science Area of Concentration under the M.A. in Education degree program. The courses in chemistry these students take must be approved by their advisor in the Science Area (Dr. E. O. Beal), by their advisor in Secondary Education, and by the Head of the Chemistry Department.

Graduate Courses in Chemistry:

516. Investigations in Chemistry. One to three hours.

A critical and comprehensive study of chemical literature dealing with a special topic of interest to the student, including reports and proposals for further research. (It is not applicable to the M.S. degree.)

520. Advanced Inorganic Chemistry I. Three hours.

Prerequisites: Chemistry 352 and 420 or equivalent.

This course will consist of the study of various aspects of coordination chemistry. Topics covered will include the chemical bonding, stability, and stereochemistry of coordination and organometallic compounds.

521. Advanced Inorganic Chemistry II. Three hours.

Prerequisites: Chemistry 520 or consent of instructor.

The course content will consist of a study of various current theories of inorganic reaction mechanisms. Modern techniques of studying inorganic reaction rates, as well as other selected topics, will be included.

530. Instrumental Analysis I. Three hours.

Prerequisites: Chemistry 435 or equivalent.

A study of the theory and applications of modern instrumental methods of analysis.

531. Instrumental Analysis II. Three hours.

Prerequisite: Chemistry 530.

A continuation of the study of modern instrumental methods of analysis.

540. Organic Reactions. Three hours.

Prerequisites: Chemistry 440 or consent of instructor.

A study of modern synthetic methods used in organic chemistry.

541. Theoretical Organic Chemistry. Three hours.

Prerequisites: Chemistry 352 and 440 or consent of instructor.

A study of modern theories of organic reaction pathways.

550. Chemical Thermodynamics. Three hours.

Prerequisites: Chemistry 352 and Math 228 or equivalents.

The study of thermodynamics with emphasis on chemical applications.

551. Chemical Kinetics. Three hours.

Prerequisites: Chemistry 550 or consent of instructor.

A general consideration of chemical reaction rates and theory of reaction rates.

562. Intermediary Metabolism. Three hours.

Prerequisite: Chemistry 461 or equivalent.

An intensive study of the metabolic pathways for carbohydrates, lipids, and proteins.

563. Enzymology. Three hours.

Prerequisite: Chemistry 461 or equivalent.

An intensive study of enzymes and mechanisms of reactions in biological systems.

570. Lecture Demonstration Techniques. One hour.

Prerequisite: Chemistry 352 or equivalent.

A practical course in the design and operation of meaningful lecture demonstrations in chemistry. Required of all MSCST candidates; does not meet requirements for the M.S. degree.

598. Graduate Seminar. One hour.

Prerequisites: graduate standing.

Reports and discussions of recent research in chemistry. Required of all graduate students each semester but only once for credit.

632. Principles of Analytical Chemistry. Three hours.

Prerequisite: Chemistry 435 or equivalent.

A study of the theory and practice of modern quantitative analysis.

652. Introductory Quantum Mechanics. Three hours.

Prerequisites: Chemistry 550 or consent of instructor.

Introduction to quantum mechanics with emphasis on the aspects most related to chemistry.

675. Advanced Topics in Chemistry. One to three hours.

Prerequisite: consent of instructor.

Modern topics in the fields of analytical, biological, inorganic, organic and physical chemistry offered on demand. Course may be repeated for credit provided topics differ for each semester. Lecture and recitation meet one period per week for each hour of credit.

699. Research in Chemistry. One to five hours.

Experimental work in analytical, biological, inorganic, organic, or physical chemistry. May be repeated indefinitely.

The following 400-level courses may be taken for graduate credit: (See undergraduate catalog for more detailed course descriptions).

- 412. Introduction to Physical Chemistry. Four hours.**
Prerequisites: Chemistry 230 and Mathematics 125 or equivalents.
Acceptable towards M.A. in Education; does not meet requirements for M.S. or M.S.C.T. degrees.
- 413. Introductory Physical Laboratory. One hour.**
Prerequisites: Chemistry 412 co-requisite.
Acceptable towards M.A. in Education; does not meet requirements for M.S. or M.S.C.T. degrees.
- 420. Inorganic Chemistry. Three hours.**
Prerequisites: Chemistry 352 or concurrently with Chemistry 352.
- 421. Inorganic Chemistry Laboratory. Two hours.**
Prerequisites: Chemistry 420 or concurrently with Chemistry 420.
Not acceptable for M.S. degree.
- 430. Advanced Quantitative Analysis. Two hours.**
Prerequisite: Chemistry 332 or Chemistry 435.
Not acceptable for M.S. degree.
- 431. Advanced Quantitative Laboratory. Two hours.**
Prerequisite: Chemistry 332 or Chemistry 435.
Not acceptable for M.S. degree.
- 435. Analytical Chemistry. Four hours.**
Prerequisite: Chemistry 352 or concurrently with Chemistry 352.
- 440. Advanced Organic Chemistry. Two hours.**
Prerequisites: Chemistry 342 and 343 or equivalents.
- 441. Advanced Organic Laboratory. Two hours.**
Prerequisites: Chemistry 342 and 343 or equivalents.
Not acceptable for M.S. degree.
- 442. Quantative Organic Analysis. Four hours.**
Prerequisites: Chemistry 342 and 343 or equivalents.
- 446. Biochemistry. Three hours.**
Prerequisites: Chemistry 342 or concurrently with Chemistry 342.
Not acceptable for M.S. degree in chemistry.
- 447. Biochemistry Laboratory. One hour.**
Prerequisites: Chemistry 446 or concurrently with Chemistry 446.
Not acceptable for M.S. degree in chemistry.
- 450. Advanced Physical Chemistry. Two hours.**
Prerequisites: Chemistry 352 or equivalent.
- 460. Biochemistry I. Four hours.**
Prerequisites: Chemistry 342 and 343 and consent of instructor.
Must be followed by Chemistry 461 in order to earn graduate credit.

- 461. Biochemistry II. Four hours.**
Prerequisite: Chemistry 460.

The following courses do not meet requirements for M.S. or M.S.C.T. degrees but are acceptable towards the M.A. in Education.

- 350. Physical Chemistry I. Four hours.**
Prerequisites: Chemistry 230, 340 and 341, Mathematics 227 and Physics 202 or 206, or equivalents.
- 352. Physical Chemistry II. Four hours.**
Prerequisites: Chemistry 350 and Mathematics 228.

ECONOMICS

Master of Arts in Economics; Master of Arts in Education (Economics major or minor).

Master of Arts in Economics. The Master of Arts in Economics program is designed to prepare students for further graduate work leading to the Ph.D. Degree, for teaching at the junior college level, or for employment in business or government.

In addition to a good standing admission to the Graduate College, the student must have a 2.7 average in economics courses. Students having less than 2.7 for economics courses may be admitted on a probationary basis upon recommendation of the Department of Economics.

Prior to admission the applicant must have completed at least 21 semester hours in economics including six hours of micro and macro-economic theory, three hours of elementary statistics, and at least one course in calculus or mathematical economics. The last requirement may be waived if the student registers for one of those courses during the first semester after admission.

A minimum of 24 semester hours with an average of 3.0 will be required for completion of the program. All students must complete Economics 465 (Econometrics) and Economics 598 (Directed Studies) or Economics 599 (Economic Research and Report Writing). Nine semester hours of 400-level courses may be taken to fulfill the overall requirements.

All students will be required to write a thesis carrying six hours credit, thus making a total of thirty semester hours, and the research

tool requirement must be met by demonstrating the ability to use a foreign language.

Master of Arts in Education (Economics major or minor)

This program provides additional graduate coursework in economics while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student majoring in economics may take a minimum of 18 hours or a maximum of 21 hours in that department, while the student minoring in economics may take a minimum of 12 or a maximum of 15 hours in economics. The remaining coursework will be taken in professional education.

Graduate Courses in Economics:

501. A Survey of Public Theory. Three hours.

Prerequisite: Economics 301 and graduate standing.

A comprehensive study of the basic theory of alternative sources of public revenues; a study of the theoretical aspects of the impact, incidence, and effects of various types of taxation. A part of this course will be devoted to fiscal policy theory.

520. Advanced Microeconomic Theory. Three hours.

Prerequisite: Economics 320.

An analysis of advanced topics in microeconomic theory; theory of consumer behavior, theory of production and distribution, general equilibrium analysis, and the introduction to welfare economics.

525. Advanced Macroeconomic Theory. Three hours.

Prerequisite: Economics 450, 460, or 325.

Advanced theory of the determinants of national income, output, employment, and the price level. Emphasis will be placed on Keynesian and post Keynesian aggregate economic theory and their relationship to economic policy.

530. Monetary Theory. Three hours.

Prerequisite: graduate standing.

This course will include classical, neoclassical, Keynesian, and modern theories of money. Emphasis will be placed on the theoretical aspects of the functions of money.

540. Land Economics. Three hours.

Physical, institutional, and technological factors affecting the use of land resources. Analysis of the sources which determines the allocation of this factor of production. Emphasis will be placed on the economic principles and problems relating to the use and control of land.

550. Government Financial Administration. Three hours.

Institutional and economic factors associated with the management of governmental revenues and expenditures. Topics to be considered will include procedures for the receipt and disbursement of public funds, capital budgeting, and the issuance and retirement of public debt instruments.

560. Seminar in Economic Theory. Three hours.

Prerequisite: Graduate standing.

A study of the evolution of economic theory from the classical school through post Keynesian theory. This course will be devoted to a study of economic theory rather than economic thought.

570. Economic Growth Theory. Three hours.

Prerequisite: A minor in economics or its equivalent.

A study of the significant factors associated with economic growth and development. The relationship between public and private contributions to economic growth. This course will include a study of various types of formal growth models.

575. Advanced International Economics. Three hours.

Prerequisite: Graduate standing.

An intensive study of the theory of comparative advantage, barriers to free trade, international monetary relations, and exchange rate theory.

598. Directed Studies. Three hours.

Prerequisite: Permission of instructor.

Intensive investigation of specified economic topics.

599. Economic Research and Report Writing. Three hours.

Involves research and evaluation of primary statistical data and training in techniques for formal research reporting.

The following 400-level courses may be taken for graduate credit:

450. Central Banking Theory and Monetary Policy. Three hours.

460. Business Cycles. Three hours.

464. Introduction to Mathematical Economics. Three hours.

465. Introduction to Econometrics. Three hours.

470. Economic growth. Three hours.

490. Economic Thought to 1870. Three hours.

EDUCATION, FOUNDATIONS AND CURRICULUM

The Educational Foundations and Curriculum Area administers the core or foundation courses for all graduate education programs and those courses that are interdepartmental in nature. Also administered through this area are those courses presently unassigned to a department which are part of a developing program. Such courses are listed along with all other courses in the area of Education.

EDUCATION, COUNSELOR

Master of Arts in Education leading to Provisional Certification in Counseling; Master of Public Service degree with Counselor Education option (see page 125); Thirty-Hour Post-Master's program leading to a Standard Certificate for Counselors (see page 131).

The major purpose of Counselor Education programs is to provide qualified personnel opportunities to develop the necessary competencies required of professional workers in the area of guidance and counseling.

Counselor Education programs are available at Western to prepare school and professional personnel for the following positions:

1. Elementary School Counselor
2. Secondary School Counselor
3. Junior College Counselor
4. Employment Counselor
5. Vocational Counselor
6. Student Personnel Workers in Higher Education

The School Counselor Curriculum. This program leads to the Master of Arts degree and the Provisional Certificate for School Counselors.

I. Pre-Admission Course Requirements:

A. Professional Education Requirements:

Students shall complete two of the following four courses prior to admission to the program for school counselors:

- Education 577—History and Philosophy)
- Education 580—The Curriculum)
- Education 576—Foundations of Education)
- Education 500—Research Methods)

6 sem. hrs.

B. Counselor Education Requirement:

Students shall complete the following three hour course prior to admission to the program for school counselors:

Education 550—Introduction to Guidance ----- 3 sem. hrs.

TOTAL ----- 9 sem. hrs.

II. Requirements for Admission to the School Counselor Program:

Admission to the school counselor program requires the approval of the Department of Counselor Education admissions committee. This approval will be based upon the following:

- A. Successful completion of the pre-admission requirements including the attainment of full graduate standing.
- B. The possession of a teaching certificate.
- C. One year's satisfactory teaching experience in public or private school. This requirement can be waived with the understanding that it is completed prior to or completed concurrently with program completion, or in some limited instances it can be waived upon the determination of the staff in the Department of Counselor Education. The Department of Counselor Education staff has the responsibility of assessing the level of maturity of the candidates and can require additional experiences in the world of work generally, in the teaching field, and/or including additional course work, either admitting the candidate to the program or permitting the completion of the certification requirements. Recommendation for provisional certification will not be made until the teaching and work experience requirements are met.

D. Demonstration of potential for developing effective relationships with students, teachers, administrators, and parents, and a familiarity with themselves and the objectives of the Counselor Education program. This potential will be determined through a program of self-evaluation by the candidate and an evaluation of the student by the Department of Counselor Education staff. Specific activities and experiences provided in the introductory guidance course will play a key role in this determination as well as securing of information from other sources as employers, supervisors, graduate instructors, and others as needed. Admission to the school Counselor Program does not insure successful completion of the program.

III. Post-Admission Course Requirements:

Upon the student's admission to the school counselor program, the schedule below will be followed:

A. Course Requirements in the Department of Counselor Education:

1. ELEMENTARY SCHOOL COUNSELOR:

Education 552—Individual and Group Analysis	3 sem. hrs.
Education 554—Group Guidance	3 sem. hrs.
Education 558—Counseling Theory and Practice	3 sem. hrs.
Education 560—Counseling Practicum	3 sem. hrs.
(Experiences in the Practicum must be obtained at the elementary school level)	

TOTAL12 sem. hrs.

2. SECONDARY SCHOOL COUNSELOR:

Education 552—Individual and Group Analysis	3 sem. hrs.
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*Education 556—Informational Services	3 sem. hrs.
Education 558—Counseling Theory and Practice	3 sem. hrs.
Education 560—Counseling Practicum	3 sem. hrs.
(Experiences in the Practicum must be obtained at the secondary school level)	
TOTAL	12 sem. hrs.

B. Course Requirements in the Subject Matter Area (minor):

1. ELEMENTARY SCHOOL COUNSELOR:

Guided related subject matter courses in the area of psychological, physical and social development of children	9 sem. hrs.
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TOTAL (after admission)21 sem. hrs.

TOTAL Semester Hours30 sem. hrs.

2. SECONDARY SCHOOL COUNSELOR:

Guided related subject matter courses other than professional education	9 sem. hrs.
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TOTAL (after admission)21 sem. hrs.

TOTAL Semester Hours30 sem. hrs.

*In some special cases Education 554, Group Guidance, may be used to meet this requirement.

EDUCATION, ELEMENTARY

Curriculum for Elementary Teachers leading to the Master of Arts Degree and the Standard Elementary Certificate.

The Standard Elementary Certificate, valid for ten years, shall be issued to a person who meets the requirements of law and general regulations of the State Board of Education and files a transcript of credits showing the completion of the four-year curriculum for the training of elementary teachers as prescribed by the Council on Public Higher Education and who, in addition thereto, completes the requirements for a Master's Degree in a standard graduate school, as prescribed.

The curriculum leading to the Standard Elementary Certificate shall be based upon the following:

1. Completion of the requirements for the Master's Degree which shall be based upon at least thirty semester hours of graduate work. For students who write a thesis, a minimum of 24 semester hours shall be required.
2. At least fifteen of the thirty hours required for the degree must be in courses open only to graduate students. (This includes the nine hours required in professional education).
3. At least twelve semester hours of the required work shall be in professional education. Nine hours of the required twelve must be in courses open only to graduate students and must be selected from the following areas: (a) a general study of curriculum development, (b) research methodology, (c) advanced study in reading (required unless waived on basis of previous advanced study in reading), (d) advanced study in human growth and development, (e) the psychology of learning, (f) a seminar in instruction devoted to the method of teaching, (g) foundations in education-sociological, psychological, philosophical historical. These courses will be chosen according to the student's needs after consultation with the student's graduate advisor in education.
4. At least twelve semester hours of the total hours required for the degree shall be non-professional subject matter courses. These courses must be selected from the fields of study required in general education and/or in subject matter courses used in partial fulfillment of the four-year elementary curriculum for elementary certification.

Special Emphases

Within the guidelines outlined above an elementary teacher may elect an area of specialization. Some of those programs available are:

1. Early Childhood Education.
2. Reading.
3. Mental Retardation—(work available leading to Provisional Certification for both the Educable and Trainable groups of mentally retarded.)
4. Elementary Librarian (Provisional Certification)

The student in elementary education may take a distributed subject matter graduate minor which may include courses in as many as three different subject fields.

EDUCATION, SECONDARY

Curriculum for High School Teachers Leading to the Master of Arts Degree and a Standard High School Certificate.

The Standard High School Certificate, valid for ten years, shall be issued to a person who meets the requirements of law and general regulations of the State Board of Education and files a transcript of credits showing the completion of the four-year curriculum for the training of high school teachers as prescribed by the Council on Public Higher Education, and who, in addition thereto, completes the requirements for a Master's Degree in a standard graduate school as prescribed.

The curriculum leading to the Standard High School Certificate is based upon the following:

1. Completion of the requirements for the Master's Degree which shall be based upon at least thirty semester hours of graduate work. For students who write a thesis, a minimum of twenty-four semester hours is required.
2. At least fifteen of the thirty hours required for the Master's Degree must be in courses open only to graduate students.
3. Nine of the fifteen hours must be in professional education courses.
4. At least nine semester hours of the required work shall be in professional education courses designed to develop the recommended competencies. If only nine hours in professional education are completed, all nine hours must be in courses open only to graduate students. These courses will be chosen according to the student's needs after consultation with the student's graduate advisor in education, and they shall be selected from the following areas:
 - (1) A general study of curriculum development.
 - (2) Research Methodology.
 - (3) Advanced study in human growth and development.
 - (4) The psychology of learning.
 - (5) A seminar in instruction devoted to the method of teaching.
 - (6) Foundations in education—sociological, psychological, philosophical, historical.

At least twelve of the thirty semester hours required for the degree shall be non-professional subject matter courses. These courses should be selected from areas that will strengthen the academic specialization of the secondary teacher and/or to further develop the general education background. Persons holding the Provisional High School Certificate for Vocational Agriculture may satisfy this section of the requirements with a minimum of six semester hours graduate credit rather than twelve.

The remaining courses should be selected on the basis of the individual needs of the teacher in keeping with policies developed by the institution. Western offers a graduate major in agriculture, biology, business education and office administration, chemistry, economics, English, geography, German, government, health, history, home economics, library science, mathematics, music, physical education, psychology, Spanish, and speech. The student may elect to major in Education and minor in a wide range of subject areas. In addition, the student may elect to major in one of the following subject fields:

1. Social Science Area
2. Science or Science-Mathematics Area
3. English and Allied Language Arts Area
4. Music Education

If the student majors in an area other than education, a minimum of nine hours must be earned in one of the subjects included in the area.

EDUCATION, SCHOOL ADMINISTRATION

Leading to a Professional Certificate for School Administration and Supervision

The curriculum in School Administration Programs is designed (1) to give qualified personnel the opportunity to acquire attitudes, advanced knowledge, understandings, and skills in their fields of interest, and (2) to prepare qualified personnel to perform effectively the leadership responsibilities in the elementary and secondary schools.

The courses and experiences provided are designed to meet professional certification standards in school administration and supervision. Programs are offered and the certificate may be endorsed in the follow-

ing areas: Elementary Principal, Secondary Principal, Supervisor of Instruction, Director of Pupil Personnel, School Business Administrator, and Superintendent. The Professional Certificate for School Administration and Supervision shall be issued initially upon completion of a program of preparation for one of the previously-mentioned school leadership positions. The certificate shall be endorsed for the specific position for which the program of preparation has been completed. When the Professional Certificate for School Administration and Supervision has been issued and endorsed for one position it may be further endorsed for any of the other positions upon completion of that particular program.

All School Administration Programs, with the exception of School Business Administrators, require additional study above and beyond the Master's Degree. To be endorsed for the Superintendentcy a minimum of thirty hours beyond the Master's degree is required.

Application for admission to School Administration Programs (except School Business Administrators) should be made after the completion of the M. A. degree. Acceptance in these programs will be based on the recommendations of a selection committee, using as a basis for approval the following criteria:

- (1) Satisfactory experience in public or private schools.
- (2) Recommendations from school officials where the experience was obtained.
- (3) Recommendations from graduate faculty members with whom the candidate has had courses.
- (4) Satisfactory standardized test scores indicating achievement and a potential for growth.
- (5) Satisfactory scholastic record.
- (6) Personal interview.

Curriculum for School Business Administrators Leading to a Master's Degree and Standard Certification:

Provisional Certificate:

- (1) Completion of a Bachelor's Degree.
- (2) Completion of eighteen hours toward Standard Certificate.
- (3) Two years successful experience in Government, Business, or Education.

Standard Certificate:

- (1) Completion of M. A. Degree.
- (2) Three years experience as a School Business Administrator.

Required Courses in Education:

- 577 History and Philosophy of Education
- 585 Fundamentals of School Administration
- 677 School Law
- 676 School Finance
- 678 School Building
- 580 Curriculum

Additional Required Courses or Demonstrated Competency in the following:

- Office and Personnel Management
- Accounting
- Public Finance
- Taxation
- Business Law
- School Business Management
- Data Processing

Curriculum for Elementary School Principal Endorsement:

The professional Certificate for School Administration and Supervision may be endorsed for the position of Elementary School Principal when the following conditions have been met:

1. Completion of the requirements for the Standard Elementary Certificate.
2. Admission to the curriculum for the elementary school principalship in accordance with selection and admission criteria.
3. Completion of a minimum of fifteen hours beyond the M.A. degree.
4. Three years of successful teaching experience.

Required Courses in Education

- 500—Research Methods
- 550—Introduction to Guidance
- 585—Fundamentals of School Administration

Fifteen hours of departmental electives with emphasis in elementary education are to be selected from the following areas:

- Administration
- Curriculum
- Supervision
- Behavioral Sciences

Curriculum for Secondary School Principal Endorsement:

The Professional Certificate for School Administration and Supervision may be endorsed for the position of Secondary School Principal when the following conditions have been met:

1. Completion of the requirements for the Standard High School Certificate.
2. Admission to the curriculum for the secondary school principalship in accordance with selection and admission criteria.
3. Completion of a minimum of fifteen hours beyond the M.A. degree.
4. Three years of successful teaching experience.

Required Courses in Education

- 500—Research Methods
- 550—Introduction to Guidance
- 585—Fundamentals of School Administration

Fifteen hours of departmental approved electives with emphasis in secondary education are to be selected from the following areas:

- Administration
- Curriculum
- Supervision
- Behavioral Sciences

Curriculum for Director of Pupil Personnel Endorsement:

The Professional Certificate for School Administration and Supervision may be endorsed for the position of Director of Pupil Personnel when the following conditions have been met:

1. Completion of the requirements for either the Standard Elementary Certificate or the Standard High School Certificate.
2. Admission to the curriculum for Director of Pupil Personnel in accordance with selection and admission criteria.

3. Completion of a minimum of fifteen hours beyond the M.A. degree.
4. Three years of successful teaching experience.

Required Courses in Education

- 500—Research Methods
- 550—Introduction to Guidance
- 583—Accounting for Pupil Personnel
- 585—Fundamentals of School Administration
 - Statistics, Data Processing or similar approved course

Nine hours of departmental approved electives are to be selected from the Behavioral Sciences.

Curriculum for Supervisor Endorsement:

The Professional Certificate for School Administration and Supervision may be endorsed for the position of Supervisor of Instruction when the following conditions have been met:

1. Completion of the requirements for either the Standard Elementary Certificate or the Standard High School Certificate.
2. Admission to the curriculum for Supervision of Instruction in accordance with selection and admission criteria.
3. Completion of a minimum of fifteen hours beyond the M.A. degree.
4. Three years of successful teaching experience.

Required Courses in Education

- 500—Research Methods
- 585—Fundamentals of School Administration
 - Advanced Reading

Departmental approved electives are to be selected from the following areas:

- 6 hours in Curriculum (elementary or secondary)
- 6 hours in Supervision
- 3 hours in Administration
- 9 hours in Behavioral Sciences

Curriculum for Superintendent Endorsement:

The Professional Certificate for School Administration and Supervision may be endorsed for the position of School Superintendent when the following conditions have been met:

1. Completion of the requirements for either the Standard Elementary Certificate or the Standard High School Certificate.
2. Admission to the curriculum for the Superintendency in accordance with selection and admission criteria.
3. Completion of the requirements for Elementary Principal, Secondary Principal or Supervisor Endorsement.
4. Completion of a minimum of thirty hours beyond the M.A. degree.
5. As a general rule, a minimum of twenty-one graduate hours outside of education must be completed within the sixty hour minimum.
6. As a general rule, thirty-nine graduate hours in professional education must be completed in the sixty hour minimum.
7. Five years of successful experience in teaching or administration.

Required Courses in Education

- 676—School Finance
- 677—School Law
- 678—School Plant Administration

Approved electives to be selected in professional education, behavioral sciences and/or subject-matter fields in order to complete certification requirements and satisfy administrative competencies.

Graduate Courses in Education

500. Research Methods. Three hours.

Application of scientific method to educational research including theory of research, experimental design, techniques in data gathering and the interpretation of results. To include research reporting and bibliographical techniques.

501. Educational Statistics. Three hours.

Graphic and tabular arrangement of data; measures of central tendency; measures of relationship.

503. Organization of the Elementary School Science. Three hours.

An advanced study of principles and practices in curriculum construction in the elementary school. Emphasis is placed on forces affecting curriculum and current innovations and trends.

- 505. Advanced Materials and Methods in Modern Mathematics for Elementary Teachers. Three hours.**
Mathematics for grades kindergarten through grade eight is taught with an attempt to blend the conceptual, the computational and application aspects of mathematics. Emphasis is placed on the structural aspects of mathematics and an attempt is made to show the "why" of arithmetic computation. An extension of Education 305.
- 506. Seminar in Elementary School Science. Three hours.**
A graduate seminar in methods and materials appropriate to the teaching of science in the elementary school.
- 508. Child Development and Child Study for Elementary Teachers. Three hours.**
A study of the educational implications of major theories of child development. The course includes an intensive study of a child or children with interpretations of the collected data in terms of educational techniques and practices. Prerequisite: Education 500 or permission of instructor.
- 509. Curriculum Trends in Early Childhood Education. Three hours.**
A study of current national and international issues and problems in preschool and early elementary education with emphasis on program planning for curriculum improvement.
- 510. Seminar in Early Childhood Education. Three hours.**
A study of the research findings, as reported in scientific literature, about young children and early childhood education.
- 519. Foundations of Reading Instruction. Three hours.**
An analysis of the reading process with special emphasis upon the psychological and physiological foundations of the reading-act. Required in the program leading to Standard Certification unless an advanced course in reading has been completed on the undergraduate level.
- 520. Clinical Diagnosis of Reading Disabilities. Three hours.**
A study of the nature and causes of reading disabilities and investigation of general and specific principles and approaches to diagnosis. Through actual case studies students will use both group and individual tests in diagnosis. The interpretation of these tests and recommendations for remediation will be developed.
- 521. Correction of Reading Difficulties (Practicum). Three hours.**
The three primary areas of study in this course are: Development of instructional techniques for use with individuals or groups involved in remedial reading instruction; investigations into materials and procedures for remedial reading instruction; participation in clinical experiences with remedial students.
- 522. Investigations in Reading. Three hours.**
A comprehensive investigation of the research and descriptive literature in the field of reading on an individual basis. Permission of the instructor required.

- 528. Seminar in the Teaching of Secretarial Subjects. Three hours.**
Materials, methods, techniques, and devices for teaching typewriting, shorthand, and related skilled subjects. Required of graduate students majoring in business education. Review and application of research findings to this area.
- 529. Seminar in the Teaching of Bookkeeping and Basic Business. Three hours.**
Purposes, materials, methods, and techniques for teaching bookkeeping and basic business. Required of graduate students majoring in business education. Review and application of research findings to this area.
- 530. Seminar in English Education. Three hours.**
A graduate seminar designed primarily for experienced English teachers. Exploration of current methods and materials for junior and senior high school English courses; research and professional trends including rhetoric, psycholinguistics, lexicographics and transformational grammars.
Prerequisite: Prior permission of the instructor.
- 531. Seminar in Art Education. Three hours.**
A graduate seminar designed primarily for experienced art teachers and art specialists (supervisors, consultants, coordinators, and directors of art). Exploration of curricular trends in art education; methods and materials of teaching and supervising art in the public schools.
Prerequisite: Prior permission of the instructor.
- 532. Seminar in Foreign Language Education. Three hours.**
A graduate seminar designed primarily for experienced foreign language teachers. Exploration of trends in foreign language education methods and materials for teaching a foreign language at the secondary and advanced levels of instruction.
Prerequisite: Prior permission of the instructor.
- 533. Seminar in Industrial Arts Education. Three hours.**
A graduate seminar designed primarily for experienced Industrial Arts teachers. Course content includes historical development, exploration of curricular trends and innovations, methods and materials of teaching, and current research and problems relating to the teaching of industrial arts.
Prerequisite: Prior approval of the instructor.
- 534. Seminar in Mathematics Education. Three hours.**
A graduate seminar designed primarily for experienced secondary school mathematics teachers. Designed to make teachers aware of newer concepts in curriculum and methods of instruction, current research and problems in mathematics education.
Prerequisite: Prior approval of the instructor.
- 535. Seminar in Music Education. Three hours.**
A graduate seminar designed primarily for experienced music teachers. A consideration of the historical, philosophical and psycho-

logical foundations of music education: the application of the principles of education to the music program. Major emphasis is placed on current trends in educational thought and their implications for instruction, supervision, administration and evaluation in music education.

536. Seminar in the Teaching of Physical Education. Three hours.

A detailed study and integration of traditional and recent techniques, methods, and knowledge in the practical application of scientific principles to the teaching of physical education and the coaching of sports and games. Opportunities for intensive investigation in specific pedagogical problems are afforded through the modalities of lectures, discussion groups, demonstrations, participation and use of audio-visual aids.

537. Seminar in Science Education. Three hours.

A graduate seminar primarily for experienced science teachers. Designed to keep the career science teacher up-to-date on the changes in the teaching of science. Areas considered include the history and comparative study of science teaching, curricular and course content changes, materials available, evaluation, methods in science teaching, professional organizations, and research in science education. Prerequisite: Prior approval of instructor.

538. Seminar in Social Studies Education. Three hours.

A graduate seminar designed primarily for experienced secondary school social studies teachers. Deals with newer concepts in curriculum and methods of instruction and with current research in social studies education. Prerequisite: Prior approval of the instructor.

539. Seminar in Agriculture Education. Three hours.

Study of current and advanced problems in the organization, teaching, supervision, administration and evaluation of agricultural education programs. Investigation, papers and reports.

540. Seminar in Home Economics Education. Three hours.

A graduate seminar designed primarily for experienced home economics teachers. Current trends in family life education with emphasis on individualized instruction, team teaching and audio-visual aids and their use in improving learning. Prerequisite: Home Economics 572 or consent of instructor.

541. Seminar in School Libraries. Three hours.

A graduate seminar designed primarily for experienced school librarians. Areas considered include historical development, exploration of curricular trends and innovations relating to school library services, organizations for library services, materials and equipment available, physical facilities, professional organizations, and current research and problems in school librarianship.

542. Seminar in Speech Education. Three hours.

A graduate seminar designed primarily for experienced teachers. Course content includes historical development, exploration of curricular trends and innovations and current research and problems related to the teaching of speech.

547. Classroom Test Construction. Three hours.

Construction and use of classroom tests; application of testing programs to research problems in classroom teaching.

548. Research in Curriculum and Instruction. One to Three hours.

Research in instructional problems in reading, mathematics, science, social studies, and English. Research in the area of the elementary and secondary curriculum.

550. Introduction to Guidance. Three hours.

A basic course designed to present an over-all view of the philosophy, organization, administration and operation of guidance and personnel services rendered at all education levels and to develop an understanding of the functions of personnel and guidance services in modern society.

552. Individual and Group Analysis. Three hours.

A study of the methods, techniques and instruments used by guidance and personnel workers in the assessment and evaluation of individuals and groups. Attention is given to methods and administering, scoring, and interpreting both objective and subjective instruments. A survey is made of research design, statistics and computer utilization. Opportunities are provided for observation and participation in use of instruments.

553. Field Laboratory Experience in Group and Individual Analysis. One hour.

This course is taken concurrently with Education 552. These directed activities are designed to provide field laboratory experiences in the theories and practices of the group and individual analysis area.

554. Group Guidance. Three hours.

A study of the dynamics and processes within group structures; experiences in the formation of groups and their utilization in group counseling procedures and in the guidance aspects of career development and vocational choice. Opportunities are provided for observations and participation in group work.

555. Field Laboratory Experience in Group Guidance. One hour.

This course is taken concurrently with Education 554. These directed activities are designed to provide field laboratory experiences in the theories and practices of the group guidance area.

556. Informational Services. Three hours.

A study of the sources, types, and uses of educational and occupational information applicable to a program of developmental guidance and counseling.

557. Field Laboratory Experience in Informational Services. One hour.
This course is taken concurrently with Education 556. These directed activities are designed to provide field laboratory experiences in the theories and practices of the informational services area.

558. Counseling Theory and Practice. Three hours.
A study of the major contemporary theories of counseling along with the implementation of the various methods and procedures followed in individual and group counseling. Attention is also given to laboratory demonstration and participation.

559. Field Laboratory Experience in Counseling Theory and Practice. One hour.
This course is taken concurrently with Education 558. These directed activities are designed to provide field laboratory experiences in the theories and practices of the counseling area.

560. Counseling Practicum. Three hours.
Provides for supervised experiences in actual work with students in the appropriate education setting in which the individual plans to seek certification or employment. These experiences include both guidance and counseling activities with students. This practicum also provides experiences for students planning to enter employment in government business and industry.

570w. Workshops in Education. One-three hours.
Special short courses on educational problems.

571. Junior High School Curriculum. Three hours.
This course provides an opportunity for teachers, supervisors, curriculum consultants, and administrators to study the educational programs especially designed for the young adolescent. Emphasis is placed on functions organization, planning and evaluation of the junior high/middle school curriculum with attention to special curriculum areas.

576. Foundations of Education. Three hours.
An examination of past and contemporary factors in American education.

577. History and Philosophy of Education. Three hours.
Survey of the historical roots of dominant philosophies of education.

578. Basic Education for Adults. Three hours.
A graduate course designed especially for present and prospective teachers of Adult Basic Education. This involves a study of the unique aspects of teaching the disadvantaged adult. Emphasis is given to an examination of the characteristics of and factors affecting the under-educated adult student; curriculum planning; methods of instruction; and evaluation.

579. Deprivation and Education. Three hours.
A study of the cultural and social forces which deprive students of the experimental tools necessary for successful classroom learning. An investigation of experimental education programs currently operating in impoverished areas.

580. The Curriculum. Three hours.
The philosophy, the principles, the problems, and the practices of curriculum making.

581. Organization and Administration of Occupational Education Programs. Three hours.
A study of the organization, administration, and implementation of occupational education programs as an integral part of the total education system.

583. Accounting for Pupil Personnel. Three hours.
Problems of personnel accounting with special attention to the work of director of pupil personnel, and to records and reports incident to the Minimum Foundation Program.

584. Comparative Education. Three hours.
Historical and international factors influencing the development of national systems of education; methodology and research approaches to international, comparative, developmental, and cross-cultural education.

585. Fundamentals of School Administration. Three hours.
An introductory course concerned with the organization and administration of American schools. Principles of effective leadership are explored, and the roles and responsibilities of the various administrative-supervisory positions are examined.

587. Programmed Instruction. Three hours.
Overview to the field of programmed learning; its relation to research in learning theory and to audio-visual communication. Students will engage in individual research and programming of curriculum content in the field of major competence.

588. School Business Management. Three hours.
The principles of efficient and effective operation of the fiscal and business aspects of school administration are studied as they affect the educational program.

590. Administration of School Personnel. Three hours.
The concept of the personnel administrator is one of allocating human resources to accomplish the purposes of the school organization.

596. Readings in Education. One to Three hours.
Opportunity for advanced students in education to do reading and research in the field of major interest under the guidance of the major professor. Registration only by permission of the major professor.

- 597. Problems in Administration and Supervision. One to Three hours.**
Students identify and solve administrative problems of concern to them in their own school districts. Permission of instructor required.
- 598. The Organization and Supervision of Student Teaching. Three hours.**
Designed to acquaint teachers with the philosophy, theory, and practices which are essential in an effective student teaching program. Attention is given to both State and NCATE standards for teacher education, personal and professional relationships, common problems of student teachers and evaluation of student teachers.
- 599. a, b, Thesis Research. One to Three hours each.**
Special research problems in education.
- 603. Research and Experimentation Affecting the Elementary School. Three hours.**
A study of major research studies and reports of experimentation that have had or are currently having an impact on the elementary school and its curriculum.
- 620. Advanced Diagnosis of Reading Courses. Three hours.**
A laboratory course designed to give experience in advanced testing materials in diagnosing severely retarded readers.
- 621. Advanced Reading Correction Practicum. Three hours.**
A laboratory course designed to give individual and small group instruction to children with severe reading problems.
- 623. Organization and Administration of Reading Programs. Three hours.**
Investigation or organizational patterns in various kinds of reading programs and their implementation on a system-wide as well as a local school basis. Permission of the instructor required.
- 624. Seminar in Reading Problems. Three hours.**
An in-depth study of the research and descriptive literature related to specific reading problems.
- 625. Field Experience in Reading. Three, six, or nine hours.**
Full time supervised experience in a public school system working with reading problems.
- 650. Utilization of Community Resources in Guidance. Three hours.**
This course provides for individual community surveys of all resources which may be used in the processes and procedures of guidance and counseling to assist students in the proper choice of educational programs to qualify them for careers of their own selection. Based upon surveys actually made, ways and means of utilization of resources surveyed are discussed and applied where practicable.
- 652. Research in Guidance and Counseling. One to three hours.**
Research problems relating to the organization and administration of the guidance program.

- 654. Mental and Aptitude Testing. Three hours.**
Administration and interpretation of standard mental and aptitude tests as tools of educational and occupational guidance.
- 655. Seminar in Guidance Services in the Elementary School. Three hours.**
An exploration and determination of the guidance services for the elementary school that are congruent with the philosophy, curricula and student patterns within the elementary school; and the means for instituting and maintaining them in practice.
- 656. Seminar in Vocational Guidance and Occupational Adjustment. Three hours.**
This seminar provides for the intensive study of vocational guidance and occupational adjustment and application at all levels — schools and colleges, business and industry, and government.
- 658. Seminar in Guidance and Counseling. Three hours.**
The purpose of this seminar is to provide an opportunity for the systematic involvement of the student in the presentation and critical discussion of research and important studies made in the area of counseling and guidance. Both theoretical and practical criticism of relevant research studies in the field of guidance are emphasized.
- 660. Organization and Administration of Guidance Services. Three hours.**
This course provides an analysis of the guidance services in elementary and secondary schools and the appropriate organization for making effective these services. Attention will also be given to the basic principles and postulates underlying the justification of guidance services. Emphasis is placed upon problems such as: initiating guidance programs; developing related services; staffing; physical facilities; providing adequate budget; etc.
- 662. Advanced Counseling Practicum. Three to six hours.**
The purpose of the advanced counseling practicum is to function as a training facility for supervised on-campus experiences in the counseling of elementary, junior and senior high school students, and their parents. Emphasis is placed upon educational, vocational, and social-personal planning and problems. The practicum also provides for an understanding of and for practice in relating the other main guidance services (individual inventory, information services, placement, and follow-up) to the heart of the guidance process . . . counseling. It also involves opportunities for experience in providing consultative services to professional people working with children who might be teachers, principals, counselors, agency workers and others.
- 676. Public School Finance. Three hours.**
Prerequisite: Fundamentals of School Administration (585). Local school finances; school budgets, accounting for school money. Unit costs and cost accounting; accounting for school property, insurance, business procedure and office practice.

- 677. School Law. Three hours.**
Prerequisite: Fundamentals of School Administration (585). Critical study of existing school code; judicial decisions; administrative problems and school code.
- 678. School Plant Administration. Three hours.**
Prerequisite: Education 585.
Educational needs and school building planning; architect service; standards of construction; types of buildings; building surveys.
- 679. Seminar in Foundations of Education. Three hours.**
An inter-disciplinary seminar for advanced students. Registration by permission of instructor.
- 680. Advanced Studies in Elementary School Curriculum. Three hours.**
Intensive analysis of the educational content and methodology of the elementary school curriculum, including the experimental approach to the curriculum.
- 681. Secondary School Curriculum. Three hours.**
Critical issues in the secondary school curriculum and ways of resolving these issues for an improved program of secondary education.
- 682. School-Community Relations. Three hours.**
A study of the background, need, and techniques of acquiring a wholesome working relationship with the laymen. Special emphasis is placed on lay involvement in school programs.
- 683. Seminar and Curriculum Development. Three hours.**
An advanced seminar for the consideration of factors influencing curriculum development. Registration by permission of instructor.
- 684. Supervision of Elementary School Subjects. Three hours.**
Application of principles of supervision to problems of instruction in the elementary grades.
- 686. Principles of Supervision. Three hours.**
The instructional side of school administration; organization, problems, principles, and techniques of improving teachers in service.
- 688. Evaluating the Elementary School. Three hours.**
A study of the techniques of evaluation of the elementary school. Special emphasis will be given to approaches to evaluating the school for accreditation purposes as well as for general school improvement programs. This course is designed specifically for those preparing for administrative and/or instructional leadership roles.
- 691. Elementary School Organization and Administration. Three hours.**
Prerequisite: Education 585.
Problems of organization and administration of elementary schools with special emphasis on the problems of instruction; classification, promotion, and guidance of pupils; custodial services, and relationships with patrons and community.

- 692. Secondary School Organization and Administration. Three hours.**
Prerequisite: Education 585.
Problems of organization and administration of secondary schools with special emphasis on programs of instruction; classification, promotion, and guidance of pupils; relation of principal to non-professional personnel; and relationship with patrons and community.
- 693. Programs in Continuing Education. Three hours.**
A general survey of adult education with emphasis upon the philosophy, organization and administration of continuing education programs.
- 694. Seminar in Educational Administration. Three hours.**
Emphasis on current research and identification of research needed in educational administration. For advanced graduate students in administration and supervision.
- 695. School surveys. Three hours.**
Techniques of making school surveys; gathering and interpretation of data; evaluation of educational programs, evaluation of facilities; prediction of future enrollment, and presentation of school authorities.
- 696. Advanced Theory in Education Administration. Three hours.**
Theoretical approaches to the study of administration and leadership with particular reference to theories of education administration. For advanced graduate students. Registration by permission of instructor.
- 697. Research in Administration and Supervision. One to three hours.**
Special research projects in administration and supervision.
- 698. Practicum in Administration and Supervision. Three to six hours.**
Internship of other field experience for administrators and supervisors. Permission of instructor required.

The following 400-level courses may be taken for graduate credit:

- 403. The Elementary Curriculum. Three hours.**
- 404. Adult Education: Historical and Contemporary Perspectives. Three hours.**
- 412. Materials and Methods of Preschools. Three hours.**
- 414. Materials and Methods of Teaching the Educable Mentally Retarded. Three hours.**
- 417. Speech and Hearing Problems of Children. Three hours.**
- 420. Reading in the Primary Grades. Three hours.**
- 421. Reading in the Intermediate Grades. Three hours.**
- 445. Audio-Visual Materials and Methods. Three hours.**
- 455. Junior High School. Three hours.**
- 477. Materials and Methods in Library Science. Three hours.**

ENGLISH

Master of Arts in English; Master of Arts in Education (English major or minor); Master of Arts in Education (English and Allied Language Arts Area major); Master of Arts and Master of Arts in College Teaching in Humanities (of which English is a significant part).

A student interested in working toward one of these degrees should confer with the Graduate Advisor in the Department of English.

Master of Arts in English

This program is designed for students who are preparing to teach in the secondary schools, in junior colleges, or for those who expect to continue graduate work toward an advanced degree at another institution.

In order to pursue this program, a student must be eligible for admission to the Graduate College in good standing. In addition, a candidate must submit a transcript showing a minimum of thirty hours of undergraduate English with an average point standing of not less than 3.0. A satisfactory score on the aptitude section of the Graduate Record Examination must be presented.

To complete this program a student must do a minimum of twenty-four semester hours of classwork (six of which may be in a related field or fields such as dramatics, English history, foreign literature, mass media, philosophy and speech). A thesis under the direction of a member of the graduate faculty is required. This thesis will carry six semester hours of credit, making the minimum for the degree thirty semester hours.

A student must meet the research tool requirement by demonstrating the ability to read a modern foreign language; he must also pass a final examination over courses, thesis, and related materials.

Master of Arts in Education (English major or minor; English and Allied Language Arts Area major)

This program is designed for people who expect to work in the public schools at any level from elementary to junior college. The admission requirements for those who major in English or English and Allied Language Arts are the same as for the Master of Arts in English.

All participants must qualify for a Standard Certificate, and in doing so will take from 9 to 18 hours of professional Education. Those majoring in English or English and allied language arts area may take a minimum of 18 or a maximum of 21 hours in English; the student minoring in English may take a minimum of 12 or a maximum of 15 hours in that department.

Graduate Courses in English:

- 503. Linguistics and Transformational Grammar. Three hours.**
History and development of modern grammar and linguistic principles. A review of current professional writers and an introduction to the various "new" grammars.
- 508. Studies in Language Development. Three hours.**
This course is concerned with a study of the nature and function of language, the processes and stages of language learning, and the development of functional language skills.
- 509. Standard English as a Second Dialect. Three hours.**
This course offers an examination of the contrasting differences of standard and nonstandard English, a presentation of second language teaching techniques for speakers of nonstandard English, and a review of the literature on teaching materials for the teaching of the language arts to culturally disadvantaged children.
- 520. Bibliographical and Methodological Studies in Literature. Three hours.**
A systematic study of basic bibliography and bibliographical problems; research methods requisite for the M.A. thesis and scholarly publications; and the craft and methodologies of recent critical essays.
- 553. Restoration and Eighteenth Century Drama. Three hours.**
Careful study of representative plays. Evaluation of influences, movements, and productions. Wide reading and individual study.
- 560. Literary Criticism II. Three hours.**
A survey of critical theory and practice of the significant literary critics of the Western world from the Romantic period to the present.
- 581. Readings in Old English. Three hours.**
The major works in translation. Introduction to Anglo-Saxon vocabulary, grammar, and literary devices. Some readings in the original.
- 582. Middle English Literature. Three hours.**
A generous sampling of non-Chaucerian English literature from Bede to Malory, chiefly in modern translation. Some attention will be given to the language of the period.
- 583. Shakespeare II. Three hours.**
Selected comedies and histories studied in depth. Attention given to individual research in literary criticism.

- 585. Milton. Three hours.**
A general study of John Milton's poetic works with some attention to his prose.
- 587. Wordsworth and Keats. Three hours.**
A study of the major works of these two writers and an evaluation of their contributions to the Romantic Movement.
- 588. Modern British Poetry. Three hours.**
This course studies in detail the work of major twentieth century British poets.
- 591. Emerson, Thoreau, and Whitman. Three hours.**
A study of their selected works, their cultural backgrounds, their contributions, biographical and critical material.
- 592. The Age of Twain and James. Three hours.**
A study of realism and naturalism in American literature with special emphasis on Twain and James and their contemporaries.
- 593. Poe, Hawthorne, and Melville. Three hours.**
A study of their selected works, their cultural backgrounds, their contributions, biographical and critical material.
- 594. Contemporary Fiction. Three hours.**
A study of selected major figures and their works. Consideration of movements, influences, developments since 1900.
- 596. Seminar in American Writers. Three hours.**
This is an intensive course dealing with a small group of writers, or perhaps one major writer. It will vary in content from time to time according to the instructor assigned and the apparent needs of the students.
- 597. Investigations in English. Two or three hours.**
An intensive review of articles in professional journals dealing with certain problems relative to the teaching of English.
- 598. Problems in English. Two or three hours.**
Supervised research on literary or linguistic problems.
- 599. Thesis Research. Six hours.**

The following 400-level courses may be taken for graduate credit:

- 401. Advanced Composition. Three hours.**
- 404. The History of the English Language. Three hours.**
- 405. Phonetics. Three hours.**
- 406. American Regional English. Three hours.**
- 407. Descriptive Linguistics. Three hours.**
- 421. Editorial and Feature Writing. Three hours.**

- 423. Problems in Journalism. Three hours.**
- 425. Mass Media Management. Three hours.**
- 435. Problems in Radio and Television Speech. Three hours.**
- 438. Radio and Television Management. Three hours.**
- 456. Elizabethan Drama. Three hours.**
- 458. The Modern British Novel. Three hours.**
- 459. Modern Drama. Three hours.**
- 460. Literary Criticism I. Three hours.**
- 476. Anglo-American Folksongs. Three hours.**
- 478. Folklore in Literature. Three hours.**
- 479. Techniques and Materials in Folklore Studies. Three hours.**
- 481. Chaucer. Three hours.**
- 483. The English Renaissance. Three hours.**
- 485. The Seventeenth Century. Three hours.**
- 486. The Eighteenth Century. Three hours.**
- 487. Victorian Prose. Three hours.**
- 488. Victorian Poetry. Three hours.**
- 489. The English Novel. Three hours.**
- 490. The American Novel. Three hours.**
- 493. Major American Poets. Three hours.**
- 494. Kentucky Literature. Three hours.**
- 495. Southern Literature. Three hours.**
- 496. Comparative Literature. Three hours.**

FOREIGN LANGUAGES

- French:** Master of Arts in Education (French minor)
Other graduate degree programs in French are expected in the near future.
- German:** Master of Arts in Education (German major or minor)
- Spanish:** Master of Arts in Spanish; Master of Arts in College Teaching in Spanish; Master of Arts in Education (Spanish major or minor)

Master of Arts in Spanish

This program is designed for those who wish to teach Spanish on the junior or senior college level, as the initial stage on the graduate level for those intending to pursue a doctoral degree, for secondary school teachers who desire such a program in addition to meeting certification standards, and for those whose vocational objective includes a high degree of proficiency in Spanish.

In addition to general Graduate College requirements, the student must have completed the equivalent of an undergraduate minor in Spanish (eighteen hours above the elementary year), including an introductory course in Hispanic literature, with approximately a 3.0 (4.0) average in this field. Deficiencies must be made up within one year without graduate credit.

A total of 24 hours of course work is required, which must include 18 hours in the field of Hispanic literature and language. With the approval of the Graduate Advisor, six semester hours may be taken in the following related fields: another foreign language (modern or classical), English, history of Spain or of a Spanish-speaking area, and other fields which clearly relate to the Hispanic interest. Of the minimum of 18 hours of course work in Hispanic literature or language, at least nine hours must be at the 500-level or above, and of the additional six hours, three hours must be numbered 500 or above.

A thesis on a topic approved by the student's advisor and the head of the Department and bearing a maximum of 6 hours credit is required.

An examination over course work and the thesis must be satisfactorily completed.

Prior to taking his final examination the student must demonstrate reading ability sufficient to do scholarly research in another language, modern or classical. The language chosen must meet the approval of the head of the Department.

Master of Arts in College Teaching in Spanish

This program is designed especially to prepare students for the teaching of Spanish on the junior or senior college level. In addition to admission standards for the Master of Arts in Spanish, a commitment to college teaching is required of candidates for this degree program.

A total of 24 hours of course work is required, which must include 18 hours in the field of Hispanic literature and language. With the

approval of the graduate advisor, a maximum of six semester hours may be taken in the following related fields: another foreign language (modern or classical), English, history of Spain or of a Spanish-speaking area, professional education, and other fields which clearly relate to the Hispanic interest. Of the minimum of 18 hours of course work in Hispanic literature or language, at least nine hours must be numbered 500 or above, and of the additional six hours, three hours must be numbered 500 or above.

A course in foreign language materials and methods or its equivalent is required. If the student has not already completed such a course, he may enroll in it for graduate credit and take it concurrently with a required period of supervised teaching.

A thesis is optional. However, if the thesis is elected, it will carry six semester hours of credit, completing the thirty hours required for the degree. The topic must be approved by the student's advisor and the head of the Department. The student may elect to do additional course work in Hispanic literature or language in lieu of writing a thesis. Three hours of this work must be at the 500-level or above.

The student must do some supervised college teaching under the direction of a member of the department of Foreign Languages. An examination over course work and the thesis, if elected, must be satisfactorily completed.

Master of Arts in Education (French minor; German major or minor; Spanish major or minor)

This program provides additional graduate coursework in French, German, or Spanish while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student majoring in German or Spanish may take a minimum of 18 or a maximum of 21 hours in his chosen major, while the student minoring in French, German, or Spanish may take a minimum of 12 or a maximum of 15 hours in his chosen field. The remaining hours will be taken in professional education courses.

Graduate Courses in Foreign Languages

520. Seminar in French Literature or Language. Three hours.

538. Seminar in German Literature. Three hours.

539. Seminar in German Literature or Language. Three hours.

570. Golden Age Prose. Three hours.

A study of the prose literature of Spain during the period 1479 to 1635 with an emphasis on *Don Quijote*.

571. Golden Age Poetry and Drama. Three hours.

A study of the poetry and drama of Spain during the period 1479 to 1635 with emphasis on the contributions of the leading writers: Garcilaso de la Vega, Lope de Vega, Góngora, and Calderón de la Barca.

572. Nineteenth Century Prose. Three hours.

A survey of the nineteenth-century peninsular Spanish novel and the *costumbrista* articles.

573. Nineteenth Century Poetry and Drama. Three hours.

A study of Romantic poetry of the period together with a parallel study of Romantic drama and the ensuing Realistic tendency in drama.

575. Twentieth Century Prose. Three hours.

A study of the novel and the essay of the Generation of '98 and of the novel of the post-civil war period in Spain. Readings and reports.

576. Twentieth Century Poetry and Drama. Three hours.

A study of the drama of Spain from the Generation of '98 through the contemporary period with emphasis on Jacinto Benavente and García Lorca. Poetry is studied beginning with the Modernists through the contemporary period, with emphasis on Juan Ramón Jiménez, Antonio Machado, and García Lorca. Readings and reports.

578. Seminar in Hispanic Literature or Language. Three hours.

599. Thesis. Six hours.

The following 400-level courses may be taken for graduate credit:

424. Nineteenth Century French Literature. Three hours.

Prerequisite: French 324 or equivalent.

425. Twentieth Century French Novel. Three hours.

Prerequisite: French 326 or equivalent.

426. Twentieth Century French Drama. Three hours.

Prerequisite: French 326 or equivalent.

427. Renaissance French Literature. Three hours.

Prerequisite: French 325 or permission of the instructor.

429. Studies in French Literature or Language. Three hours.

Prerequisite: Senior standing and permission of the instructor.

432. History of the German Language. Three hours.

Prerequisite: German 334 or permission of the instructor.

433. Survey of Nineteenth Century German Drama. Three hours.
Prerequisite: German 334 or equivalent.

434. Survey of Nineteenth Century German Prose. Three hours.
Prerequisite: German 334 or equivalent.

435. Twentieth Century German Literature. Three hours.
Prerequisite: German 334 or equivalent.

436. German Literature of the Classical Period. Three hours.
Prerequisite: German 334 or equivalent.

437. Survey of the German Lyric from the Beginnings to 1800. Three hours.
Prerequisite: German 334 or equivalent.

438. Survey of the German Lyric from 1800 to the Present. Three hours.
Prerequisite: German 334 or equivalent.

439. Studies in German Literature or Language. Three hours.
Prerequisite: Senior standing and permission of the instructor.

440. Seminar in Greek Literature. Three hours.
Prerequisite: Greek 240 or equivalent.

450. Seminar in Latin Literature. Three hours.
Prerequisite: Latin 252 or equivalent.

457. Roman Authors of the Republic. Three hours.
Prerequisite: 6 to 12 hours of Latin beyond 251.

458. Roman Authors of the Empire. Three hours.
Prerequisite: 6 to 12 hours of Latin beyond 251.

464. Nineteenth Century Russian Literature. Three hours.
Prerequisite: Russian 261 or equivalent.

465. Soviet Literature. Three hours.
Prerequisite: Russian 261 or equivalent.

496. Russian Literature in Translation. Three hours.
Prerequisite: Russian 261 or equivalent.

470. Advanced Oral Spanish. Three hours.
Prerequisite: Spanish 370 or equivalent.

471. Advanced Spanish Syntax. Three hours.
Prerequisite: Spanish 371 or equivalent.

472. Background of Modern Spanish. Three hours.
Prerequisite: Spanish 271 or equivalent and permission of the instructor.

475. Literature of Spain, I. Three hours.
Prerequisite: Spanish 374 or equivalent.

476. Literature of Spain, II. Three hours.
Prerequisite: Spanish 374 or equivalent.

- 477. Literature of Spanish America, I. Three hours.**
Prerequisite: Spanish 374 or equivalent.
- 478. Literature of Spanish America, II. Three hours.**
Prerequisite: Spanish 374 or equivalent.
- 479. Studies in Hispanic Literature or Language. Three hours.**
Prerequisite: Senior standing and permission of the instructor.

GEOGRAPHY

Master of Science in Geography; Master of Science in College Teaching in Geography; Master of Arts in Education (Geography major or minor)

The graduate programs in geography provide a basic background for students interested in candidacy for the Ph.D. degree, for careers in junior college teaching, and for service as industrial and commercial consultants. Other master's degree graduates in geography may pursue careers in cartography or enter such governmental services as regional and city planning, park service, diplomatic service, and other areas.

In addition to general Graduate College requirements the student must present an academic record giving evidence of the ability and preparation necessary for pursuing graduate studies in geography. Students not having an undergraduate major in geography may be admitted for graduate study, but such students will be required to take, without graduate credit, additional courses as are deemed necessary by the students' graduate advisory committee.

Master of Science in Geography.

Thirty semester hours of graduate credit in courses approved by the graduate advisory committee, including six hours of thesis credit, are the minimum requirements for the Master of Science Degree in geography. At least one-half of the course work requirements must be completed successfully in courses open only to graduate students.

Prior to the comprehensive Master's examination the applicant must meet the research tool requirement by either: (1) demonstrating reading ability sufficient to do scholarly research in a foreign language appropriate to his major area; or (2) demonstrating that he has mastered appropriate research techniques approved by the student's graduate committee, the department head, and the Dean of the Graduate College.

Master of Science in College Teaching in Geography.

This degree is designed for those students who intend to pursue careers in junior college or college teaching. The courses constituting a student's degree program must form a uniform and coordinated whole as determined by his graduate advisory committee. A minimum of 24 semester hours of coursework must be successfully completed if the thesis option is chosen or thirty semester hours if the non-thesis option is taken.

Master of Arts in Education (Geography major or minor)

This program is designed for those interested in public school teaching who wish to major or minor in geography. Students interested in teaching must meet all requirements for Standard High School certification including a minimum of nine hours of professional education courses. Those majoring in geography will take a minimum of 18 hours in geography, while those minoring in geography will take a minimum of 12 hours in that department.

Geography is an integral part of the Master of Public Service degree. For a description, see the Master of Public Service Degree (page 123).

Graduate Courses in Geography:

- 500a Geographical Studies in Research. Two hours.**
Directed reading and research program with the writing of research reports under the supervision of a member of the graduate faculty.
- 500b Geographical Studies in Research. Two hours.**
Continuation of 500a.
- 501. Investigations in Geography. Two hours.**
A study of selected methodology and philosophy of geography.
- 503. World Political Problems. Two hours.**
Analysis of selected problems in political geography.
- 505. Biogeography. Three hours.**
A study of the evolutionary, geographical, ecological, pedological, and edaphic factors that have been involved in the naturalization, acclimatization, and distribution of plant life with some emphasis on animal life.
- 506. Geographic Techniques for Field Investigations. Two or three hours.**
Practical applications of geographic field techniques.
- 510a Selected Topics in Geography. Three hours.**
Seminar course whose subtitles will vary from semester to semester depending upon the student needs.

510b Selected Topics in Geography. Three hours.

Seminar course whose subtitles will vary from semester to semester depending upon student needs.

510c Selected Topics in Geography. Three hours.

Seminar course whose subtitles will vary from semester to semester depending upon student needs.

580. Problems in Urban Geography. Three hours.

Analysis of selected problems in urban geography.

584. Regional Planning. Three hours.

Analysis of selected problems in regional planning.

699. Thesis Research. One to six hours.

The following 400-level courses may be taken for graduate credit:

402. Physiography of North America. Three hours.

410. Elementary Cartography. Three hours.

420. Geomorphology. Four hours.

421. Advanced Geomorphology. Three hours.

422. Climatology. Four hours.

423. Transportation (Logistics of Distribution). Three hours.

425. Political Geography. Three hours.

430. Cultural Geography. Three hours.

451. Geography of Kentucky. Two hours.

452. Field Studies in Kentucky Geography. One to three hours.

453. Geography of the Soviet Empire. Three hours.

454. Geography of Middle America. Two hours.

455. Geography of Australia and Islands of the Western Pacific. Two hours.

462. Geography of South America. Three hours.

464. Geography of Europe. Three hours.

465. Geography of Asia. Three hours.

466. Geography of Africa. Three hours.

467. Geography of the Bible Lands. Three hours.

471. Conservation of Natural Resources. Three hours.

479. Industrial and Commercial Geography. Three hours.

480. Urban Geography. Three hours.

485. Population and Resources. Three hours.

GOVERNMENT

Master of Arts in Government; Master of Arts in Education (Government major or minor); Master of Public Service (Regional Development option. (see page 126)

Master of Arts in Government

This program is designed to prepare students who expect to continue graduate work for a higher degree or who expect to apply for positions in junior college or university; to provide an academic foundation for students who wish to pursue a career in professions such as journalism, the public service, and politics; to increase the knowledge of secondary education teachers who desire such a program.

In order to pursue this program, a student must be eligible for admission to the Graduate College in good standing. His academic record must evidence his ability and preparation necessary for pursuing graduate studies in government. The applicant for admission should have a B average in his major undergraduate field and/or all undergraduate courses in government. A minimum of 24 hours of acceptable coursework must be completed. In addition, an acceptable thesis equivalent to six graduate hours is required. The thesis will be under the supervision of the chairman of the student's graduate advisory committee.

Prior to the comprehensive Master's examination the applicant must meet the research tool requirement by either (1) demonstrating reading ability sufficient to do scholarly research in a foreign language appropriate to his major area; or (2) demonstrating that he has mastered appropriate research techniques approved by the Graduate College.

A final examination over courses, thesis, and related materials must be satisfactorily passed.

Master of Arts in Education (Government major or minor)

This program provides additional graduate coursework in government while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student majoring in government may take a minimum of 18 or a maximum of 21 hours in government, while the student minoring in government may take a minimum of 12 or a maximum of 15 hours in that department. The remaining hours will be taken in professional education courses.

Graduate Courses in Government

510. **Problems in National Government. Three hours.**
Research, reports, and discussion of selected aspects of national government.
511. **Seminar in U.S. Government. Three hours.**
A study of selected problems at all levels of U. S. Government.
520. **Seminar in Public Law. Three hours.**
A systematic exposition, discussion, and analysis of selected concepts and issues in jurisprudence, and/or in administration, constitutional, and international law.
540. **Seminar in Public Administration. Three hours.**
Research and discussion of selected problems in Public Administration. **Required in Master of Public Service degree.**
550. **Seminar in International Relations. Three hours.**
Advanced study, individual and group, of the theories and practical applications of international relations in the modern world.
560. **Seminar in Comparative Government. Three hours.**
Advanced study and research in the areas of democratic and totalitarian governments.
580. **Directed Study. Three hours.**
Faculty guidance of student research and study of one or more selected fields of political science.
- 590, 591—**Thesis Writing. Three hours each.**

The following 400-level courses may be taken for graduate credit:

401. **Methods of Political Inquiry. Three hours.**
- 402 a , 402 b. **Seminar in State And Local Government. Three hours each.**
403. **Field Studies in Politics. One to four hours credit.**
421. **International Law. Three hours.**
423. **Jurisprudence. Three hours.**
431. **Normative and Empirically Related Theory. Three hours.**
432. **Early Political Theory. Three hours.**
433. **Modern Political Theory. Three hours.**
435. **American Political Theory. Three hours.**
461. **Governments and Politics of the USSR and Soviet Sphere. Three hours.**
462. **Latin American Governments and Politics. Three hours.**
463. **Politics of the Developing Nations. Three hours.**
464. **African Governments and Politics. Three hours.**
465. **Middle Eastern Governments and Politics. Three hours.**
466. **Far Eastern Governments and Politics. Three hours.**
467. **South and Southeast Asian Governments and Politics. Three hours.**

HEALTH AND SAFETY

Master of Arts in Education (Health minor); Master of Arts in Education (Health and Safety minor)

The program leading to the Master of Arts in Education with a minor in health is designed to prepare students for positions as: (1) health educators in junior and senior high schools, (2) coordinators of school health programs, (3) administrators and supervisors of school health programs, and (4) health educators in community health agencies. The following courses are required: Health 545, 567, and Education 554. Other courses must be selected from those listed below to total 12 to 15 hours in health education. The program leading to the Master of Arts in Education with a minor in health and safety is designed to prepare students for positions as: (1) teachers of driver education and health in high schools, (2) coordinators of school health and safety programs, and (3) administrators of health and driver education programs. The following courses are required: Health 545 and 567, and Safety 471 and 570. An additional course may be selected from the courses listed below.

Students following either of these programs must meet all requirements for Standard High School certification.

Graduate Courses in Health and Safety Education

Health Courses

501. **Analysis of Research in Physical Education, Health and Recreation. Three hours.**
A critical analysis and review of selected studies in the physical education, health and recreation literature related to methods, materials, techniques, and planning of research studies used and conducted by the profession.
520. **Interpretation of Physical Education, Health and Recreation Data. Three hours.**
Application of statistical techniques to physical education, health and recreation data. Basic principles and techniques in designing and analyzing physical education, health, and recreation problems are emphasized.
530. **Independent Investigations in Physical Education, Health and Recreation. One to three hours.**
Prerequisite: Health and Safety 520.
Special research problems or projects of organizational, administrative, or supervisory nature in the areas of physical education, health, or recreation.

545. The Health Education Curriculum. Three hours.

Prerequisite: Education 580.

For health educators and administrators. Consideration of various health curriculum guides and curriculum studies in health education. Laboratory work in construction of curriculum guides.

546. Field work in Community Health Programs. Three hours.

Study of the philosophy, organization, and services of community health organizations. Includes observation of, and participation in, local community health programs in voluntary and governmental health agencies.

567. Administration and Supervision of Health Programs. Three hours.

This course examines the responsibilities, activities, and problems of administering and supervising health programs. Emphasis will be placed on coordinating all health programs within, and among, the school and other community agencies.

The following 400-level courses may be taken for graduate credit:

460. School and Community Health Workshop. Three hours.

461. School Health Organization. Three hours.

469. Critical Issues in Health and Safety. Three hours.

481. Environmental Factors of Health Problems. Three hours.

482. Principles of Epidemiology. Three hours.

Safety Courses

570. Administration and Supervision of Safety Programs. Three hours.

This course examines the responsibilities, activities, and problems of administering safety programs. School and community safety programs, driver and traffic safety programs, and bus transportation will be discussed. A thorough examination of the operational procedures of safety programs on the high school, college, city, and state levels will be conducted.

470. Driver Education and Traffic Safety II. Three hours.

471. Advanced Studies in Driver Education. Three hours.

Prerequisite: Driver Education 370 or equivalent.

HISTORY

Master of Arts in History, Master of Arts in Education (History major or minor).

Master of Arts in History

This program is designed to prepare students for the teaching of history on the junior or senior college level; to provide the initial stage on the graduate level for those people who intend to pursue a doctoral degree; and for the preparation of secondary teachers who desire such a program while meeting certification requirements.

In addition to meeting general Graduate College requirements, the student must present evidence of good undergraduate preparation in the field of history. In order to be accepted to the program a student must present a major or minor in history with approximately a B average in this field.

Unity of purpose in planning the program is a necessity. A student who has an undergraduate major in history will be permitted to take one-third of his graduate work in a related field in courses approved by his graduate advisory committee. A student who presents an undergraduate minor in history must complete the Master's program in the field of history.

At least one seminar type course, which includes historiography, training in methods of graduate study, and instruction in history, must be completed.

A minimum of twenty-four hours acceptable course work must be completed. In addition, an acceptable thesis equivalent to six graduate hours is required. This thesis will be under the supervision of the chairman of the student's graduate committee. It must conform to basic rules of historical research and must indicate evidence of the use of primary resources.

The ability to use a modern foreign language must be demonstrated in accordance with rules of the Graduate College.

A final examination over courses, thesis, and related materials must be satisfactorily passed.

Master of Education (History major or minor)

This program provides additional graduate coursework in history while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student majoring in history may take a minimum of 18 or a maximum of 21 hours in history, while the student minoring in history may take a minimum of 12 or a maximum of 15 hours in that

department. The remaining hours will be taken in professional education courses.

History is also an integral part of the program for the Master of Arts in Humanities. As a general rule, students who enroll in graduate courses in history under the Humanities Program must have eighteen hours of history as a prerequisite.

Graduate Courses in History

- 500. Cultural and Social Aspects of American Life. Three hours.**
This course is designed for graduate students who have majored as undergraduates in the field of elementary education. Its purpose is to acquaint the student with the general trends and factors in American life.
- 506. Seminar in European History. Three hours.**
Problems will be developed around a limited central theme. A graduate seminar in such diverse areas as the Middle Ages, the Renaissance and the Reformation. The course may be repeated once for credit.
- 515. Nineteenth Century Britain. Three hours.**
An intensive study of the political, economic, social, and intellectual developments within Britain and her empire from 1815 until 1914.
- 517. United States and Latin America. Three hours.**
An intensive study of the relations between the United States and Latin America with major focus on Mexico, Brazil, Argentina, Chile, and Columbia.
- 519. Seminar in United States Diplomatic Relations. Three hours.**
A study of issues and accomplishments in the periods 1914-45 and 1945 to the present. The course may be repeated once for credit.
- 521. United States 1900-1945. Three hours.**
A study emphasizing the progressive era, First World War, the failure of peace, the great depression, and the New Deal.
- 522. Seminar in Western United States History. Three hours.**
One specific aspect of Western United States history, or a particular period, would constitute the major emphasis of the seminar. The Farmer's Frontier, Transportation, the Cattle Frontier. The course may be repeated once for credit.
- 525. Social and Intellectual History of the U.S.: Nineteenth Century. Three hours.**
An examination of the ideas and their possessors in 19th century America. It uses the colonial experience as a background and emphasizes 19th century thought and how it produced our social, economic, and political institutions.

- 526. Social and Intellectual History of the U.S.: Twentieth Century. Three hours.**
An examination of the ideas and their possessors.
- 527. Social and Intellectual History of Europe: Nineteenth Century. Three hours.**
An examination of the political, socio-economic, and religious thought of the nineteenth century and a study of its influence on the society of the period.
- 530. Seminar in United States History. Three hours.**
Problems will be developed around a limited central theme. A graduate seminar in such diverse areas as the Confederation Period, the Federalist era, the Jeffersonian Republicans, the Slavery Controversy. The course may be repeated once for credit.
- 531. Seminar in Kentucky History. Three hours.**
A study of the political, economic, social, and cultural development of the state from pioneer days to the present.
- 550. Thesis Writing. Three hours.**
Research, examination, and criticism of historical materials and the writing of a thesis.
- 551. Thesis Writing. Three hours.**
A continuation of 550.

The following 400-level courses may be taken for graduate credit:

- 400. The Formative Period, 1776-1815. Three hours.**
- 401a The Old South. Three hours.**
- 401b The New South. Three hours.**
- 402. The Middle Period, 1815-1850. Three hours.**
- 403. Civil War and Reconstruction. Three hours.**
- 404. The Age of the Renaissance. Three hours.**
- 405. The Age of the Reformation. Three hours.**
- 413. England Since 1914. Three hours.**
- 415. History of Colonial America. Three hours.**
- 416. The United States, 1870-1900. Three hours.**
- 417. The Mexican Republic. Three hours.**
- 418. Diplomatic History of the U.S. to 1900. Three hours.**
- 419. Diplomatic History of the U.S. since 1898. Three hours.**
- 420. Twentieth Century Russia. Three hours.**

- 421. The Far East. Three hours.
- 423. The French Revolution and Napoleonic Era. Three hours.
- 425. Modern Germany. Three hours.
- 426. The Middle East in Modern Times. Three hours.
- 450. Historiography and Historical Research. Three hours.
- 499. Advanced Individual Study. Three hours.

HOME ECONOMICS AND FAMILY LIVING

Master of Arts (Child Development and Family Living); Master of Arts in Education (Home Economics Education major or minor); Master of Public Service (Child Development and Family Living option).

The Master of Arts in Child Development and Family Living is a degree usually taken as an intermediate step preparatory to entry into a doctoral program leading to college teaching, therapeutic activity and/or research. In addition to Graduate College requirements, the student must present an undergraduate record of B in the behavioral sciences and related disciplines. Applicants who do not have the B average referred to above but whose total score on the Aptitude Tests of the Graduate Record Examination is at least 900 may be given provisional admission to remove these deficiencies.

The Master of Arts (Child Development and Family Living) student must complete research tool options as follows: (1) demonstrate ability to read subject material in either French or German; (2) specialized study in human biology and genetics; or (3) additional work in statistics and research methodology. The research tool must be approved by the Department Head.

The major requires 18 hours, and the remaining hours of the total of thirty must come from closely related studies in Counselor Education, Psychology, or Sociology. The 18 hours in the major are as follows: HEFL 491, 576, 577, 578, 579, and 580.

The remaining hours may be selected from the following:

- Ed. 501. Educational Statistics
- Ed. 558. Counseling Theory and Practice
- Psy. 563. Test Construction and Psychometric Theory

- Psy. 640. Psychopathology
- Soc. 520. Studies in Family Relations
- Soc. 590. Sociological Research Design and Analysis

The Master of Arts in Education (Vocational Home Economics) is a planned program for teachers wanting to acquire the Standard High School Certificate. Applicants must have an undergraduate major in home economics education. Majors take 18-21 graduate hours in home economics and family living and 9-12 hours of professional education. Those taking a graduate minor in home economics education may take 12-15 hours in home economics and family living and 15-18 hours in professional education. Required courses for all home economics graduate students are: HEFL 572, 573 and 574. Approved electives in home economics and family living should total 9-12 hours and receive consent of the Department Head or his representative.

The Master of Public Service (Child Development and Family Living option) stresses clinical practice and is generally taken by persons in child welfare, mental health, and pastoral care. For a detailed explanation of this degree program, see page 124.

Core courses for the Child Development and Family Living Option of the Master of Public Service degree are:

- Government 540. Public Administration.
- Sociology 565. Studies in the Community.
- Psychology 551. Social Psychology of Organization.
- Education 558. Counseling Theory and Practice.

The 18 hours in the major are: HEFL 491, 576, 577, 578, 579, and 580.

Graduate Courses in Home Economics and Family Living

- 572. Curriculum Development in Home Economics Education. Three hours. Current curriculum trends in Home Economics Education and curriculum development in specialized fields of Home Economics are considered.
- 573. Evaluation in Home Economics Education. Three hours. Includes a study of theory and techniques of evaluation in Home Economics Education at different educational levels, analysis and refinements of instruments, interpretation of results of self-evaluation and guidance, and effective administration programs.

- 574. Supervision in Home Economics Education. Three hours.**
Prerequisite: Teaching experience, advanced courses, and consent of instructor.
Theory, principles and techniques of preservice and inservice training of teachers in home economics with emphasis on preparation of supervisory materials and evaluation.
- 575. Individual Study in Home Economics Education. Three to six hours.**
Includes a comprehensive study and evaluation of home economics investigations now available, and the experiences of planning and completing an individual study of limited scope.
- 576. Theories of Child Development. Three hours.**
Prerequisites: Undergraduate course in child psychology, child development, or human growth and development. Intensive and critical analyses of cognitive, social-learning maturational, and psychoanalytic theories of human development.
- 577. Seminar in Child Development Research. Three hours.**
Prerequisites: HEFL 576 or equivalent preparation.
An analysis of current theories and research findings relevant to the development of social, perceptual-cognitive, and physical-physiological processes in children.
- 578. Seminar in Research in Marital and Family Therapy. Three hours.**
Prerequisites: An undergraduate course in marriage and the family taught in home economics, education, psychology, or sociology.
Presentation and discussion of contemporary research being conducted by marital and family investigators in the fields of anthropology, biology, psychiatry, psychology, and sociology. Stress is placed upon the critical examination of existing field and laboratory studies.
- 579. Professional Theories and Methods in Marital and Family Therapy. Three hours.**
Prerequisites: Enrollment is by consent of department head and is restricted to graduate students in: (1) the clinical program in child development and family living; or (2) the disciplines of psychology, social work, or pastoral care.
Lectures and demonstrations of contemporary theories and methods of treating couples, families, and groups who are experiencing dysfunctional family life. The contributions of Freud, Rogers, Satir, Wolpe, Ellis, and Adler are among those examined.
- 580. Internship in Marital and Family Therapy. Three hours.**
Prerequisites: HEFL 579 Professional Methods in Marital and Family Therapy.
Counseling experience with spouses and/or families is provided for degree candidates during the final semester of enrollment. Assignments are made to approved private and public agencies.
- 598. Special Topics in Home Economics and Family. One to Six hours.**
Prerequisite: Consent of instructor.
- 599. Thesis Research. Six credit hours.**

400-level courses which may be taken for graduate credit if approved by the Department Head:

- 425. History of Costume. Three hours.**
- 428. Merchandise Display and Promotion. Three hours.**
- 432. Recent Developments in Textiles. Three hours.**
- 433. Fashion Fundamentals. Three hours.**
- 434. Advanced Clothing: Tailoring. Three hours.**
- 439. Internship: Merchandising. Three hours.**
- 461. Advances in Science and Nutrition. Three hours.**
- 464. Advanced Foods. Three hours.**
- 465. Diet Therapy. Three hours.**
- 466. Experimental Foods. Three hours.**
- 491. Family Life Education. Three hours.**
- 492. Institution Food Preparation. Three hours.**
- 493. Institutional Purchasing. Three hours.**
- 494. Applied Institution Administration. Three hours.**
- 495. Organization and Management of School Lunch Service. Three hours.**
- 496. Menu Planning and Merchandising for the Food and Lodging Industry. Three hours.**
- 497. Food and Labor Cost Control. Three hours.**

INDUSTRIAL EDUCATION

Master of Arts in Education (Industrial Education minor)

In order to be admitted to the graduate program in Industrial Education, the student must meet the general Graduate College requirements.

Master of Arts in Education (Industrial Education minor)

This program provides additional graduate coursework in industrial arts while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student minoring in industrial education may take a minimum of 12 or a maximum of 15 hours in that department. The remaining hours will be taken in professional education courses.

Graduate Courses in Industrial Education

510. Investigations in Industrial Education. Three hours.

Designed for qualified individual graduate students wishing to study current problems and/or issues in the area of industrial education under the direction of a graduate faculty member. The student will be required to identify, plan, and complete a minor research paper.

520. Philosophy of Industrial Education. Three hours.

To acquaint the student with the development of industrial education in Europe and America. Emphasis placed on influences, experiments, and current trends leading to modern practices in industrial arts, vocational education, and technical education.

525. Industrial Education Curriculum. Three hours.

Includes the study of curriculum practices, concepts, and trends in industrial education; principles underlying curriculum development; and improvement of programs.

The following are designed as problem courses for independent study for the graduate student who desires to pursue a specific area.

530. Advanced Drafting. Three hours.

532. Industrial Design. Three hours.

542. Industrial Electricity and Electronics. Three hours.

544. Wood Technology. Three hours.

548. Graphic Arts. Three hours.

552. Advanced Machine Shop. Three hours.

556. Power and Auto Mechanics. Three hours.

560. Metal Technology. Three hours.

564. Problems in Crafts. Three hours.

568. Ceramics and Plastics. Three hours.

572. General Shop. Three hours.

400-level courses which may be taken for graduate credit:

410. Industrial Arts Problems. Three hours.

460. Seminar in Vocational-Industrial & Technical Education. Three hours.

465. Industrial Arts for Elementary Teachers. Three hours.

A course designed for elementary teachers and those preparing to enter the field of elementary education.

LIBRARY SCIENCE

Master of Arts in Education (Library Science major or minor)

In order to be admitted to the graduate program in Library Science, the student must meet the general Graduate College requirements. The courses in library science should be selected from the 400 and 500-level courses.

Master of Arts in Education (Library Science major or minor)

Elementary Education Major with Library Science as an Area of Specialization:

When approved by the student's graduate advisory committee, twelve to fifteen hours in the curriculum for elementary teachers leading to the Master of Arts in Education Degree and Standard Elementary Certificate will count toward certification as a public school librarian, but will not complete the requirements. Children's Literature and Student Teaching in Library Science are required for certification but do not carry graduate credit.

Secondary Education Curriculum with Library Science major or minor:

This program provides graduate coursework in library science designed for the school librarian. The student following this program must meet all requirements for Standard High School certification. The student majoring in library science may take a minimum of 18 or a maximum of 21 hours in library science, while the student minoring in library science may take a minimum of 12 or a maximum of 15 hours in that department. The remaining hours will be taken in professional education courses.

Graduate Courses in Library Science

501. Organization and Administration of the Instructional Materials Center. Three hours.

Role of the instructional materials center staff in the instructional process; relating the functions of management to the organization and administration of instructional materials centers; survey of trends related to IMC.

506. Cataloging of Non-Book Materials. Three hours.

Broader aspects of cataloging; concentrated study in cataloging and organizing of non-book materials. An extension of Library Science 406.

508. Advanced Reference. Three hours.

Content, evaluation, organization, and use of reference materials useful in special subject areas.

509. Investigations in Library Science. Three hours.

The purpose of the course is to acquaint the students with the implications of scholarly research and its uses, types of research, methods of acquiring knowledge, variables and control, and basic research tools in library literature.

400-level courses which may be taken for graduate credit:

401. Library Organization and Administration. Three hours.

402. Libraries and Librarianship. Three hours.

403. Books and Related Materials for Young People. Three hours.

404. The Library and the Computer. Three hours.

406. Classification and Cataloging. Three hours.

407. Literature for Young Adults. Three hours.

408. Reference and Bibliography. Three hours.

410. Storytelling. Three hours.

445. Audio-Visual Materials and Methods. Three hours.

MATHEMATICS

Master of Mathematics; Master of Science in Mathematics; Master of Science in College Teaching in Mathematics; Master of Arts in Education (Mathematics major or minor)

In addition to general Graduate College requirements, the student in mathematics is required to meet special departmental requirements. A student's graduate program must be approved by a designated graduate advisor at the time of admission to the Graduate College. The student who is inadequately prepared for the work desired must expect to make up without credit toward a graduate degree all required prerequisites. The following special departmental requirements apply to graduate programs in mathematics.

Master of Mathematics.

A background equivalent to an undergraduate liberal arts major in mathematics at Western is required. This must include Math 317, 318, 332, or their equivalent.

A minimum of thirty semester hours of approved graduate course work in mathematics is required for this degree. The following courses are required for this program (some of which may have been completed as an undergraduate): 432, 532, 450, 417, 517, 423, or 439, six hours of applied mathematics. Three hundred-level courses and Math 501, 502, 503 do not carry graduate credit for this program. A final examination (oral and written) is given to all candidates for this degree.

Master of Science in Mathematics.

In this program a thesis and a research tool are required in accordance with regulations of the Graduate College. The academic program is the same as the Master of Mathematics with the exception of the thesis, which carries a maximum of six semester hours. The thesis must be based upon independent study and investigation under the direction of the chairman of the student's Graduate Advisory Committee.

Master of Science in College Teaching in Mathematics.

This program is designed for those students who intend to pursue careers in community college or junior college teaching. The course and admission requirements for this degree are the same as for the Master of Mathematics except that a three hour internship course must be included in the thirty hours. This course is to be a supervised experience in college teaching. A research tool is required while the thesis is optional.

Master of Arts in Education (Mathematics major or minor)

This program provides additional graduate coursework in mathematics while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student desiring to major in mathematics in this program should have an undergraduate teaching major in mathematics. A student presenting a teaching minor and desiring to major in mathematics will be required to remove deficiencies without receiving graduate credit.

Twenty-one hours of mathematics, including Math 423 and Math 417 or 432, are required for this program. A student having an undergraduate minor in mathematics would normally be advised to pursue a minor at the graduate level. A minor on the graduate level will consist of at least twelve hours of mathematics.

Any mathematics course on the 500 level is acceptable. Acceptable 400-level courses are listed, and courses on the 300-level are acceptable for graduate credit only with the approval of the student's graduate advisor and the Dean of the Graduate College.

For further details on the Master of Arts in Education, see Education, Secondary.

Graduate Courses in Mathematics.

517. Topics from Algebra. Three hours.

Prerequisite: Math 417.

Linear transformations on finite-dimensional vector spaces; orthogonality; multilinear forms; self-adjoint transformations.

523. Topics from Geometry. Three hours.

Prerequisite: Math 423 or permission of instructor.

Plane projective geometry; transformations; subgeometries of projective geometry.

529. Mathematical Statistics I. Three hours.

Prerequisite: Math 432.

Probability models; combinatorial analysis; random variables and their distributions; moments of probability distributions; moment generating functions and sampling distributions.

530. Mathematical Statistics II. Three hours.

Prerequisite: Math 529.

Properties and determination of point estimation; interval estimation; testing hypothesis; multivariate normal distribution; nonparametric statistics and linear models.

531. Advanced Differential Equations. Three hours.

Prerequisites: Math 331, 332.

Power series solutions; existence and uniqueness theorems; stability and Liapunov's method; regular singular points; perturbations of periodic solutions.

532. Real Analysis. Three hours.

Prerequisite: Math 432.

Function spaces; additive set functions; outer measure; measurable functions; integration.

535. Advanced Applied Mathematics I. Three hours.

Prerequisite: Math 331, 332.

Eigenvalue and boundary value problems; orthogonal expansions in function spaces; classical polynomials; Sturm-Liouville theory; Fourier and Laplace transforms.

536. Advanced Applied Mathematics II. Three hours.

Prerequisite: Math 535.

Integral equations; calculus of variations; maximization of linear functionals; maximum gradient method.

539. Topology II. Three hours.

Prerequisite: Math 439.

Convergence; function spaces; complete spaces; homotopy; homology theory.

550. Complex Analysis. Three hours.

Prerequisite: Math 450.

Analytic continuation; conformal mapping; Riemann surfaces; univalent functions.

560. Functional Analysis. Three hours.

Prerequisite: Math 432.

Abstract approach to linear problems; general theorems on linear operators; spectral analysis.

570. Advanced Topics in Operations Research. Three hours.

Prerequisite: Math 432, 470 or consent of instructor.

In depth study of one or two areas of operations research, emphasizing mathematical aspects. Topics include: theory of Markov chains; dynamic programming; forecasting and prediction of discrete time series; linear programming; stochastic processes; game theory and Leontief models.

590. Special Topics in Mathematics. Three hours.

Prerequisite: Mathematics 432.

599. Thesis Research. Three hours.

Additional 500-level courses acceptable for the Master of Arts in Education

501. Introduction to Probability and Statistics I. Three hours.

Prerequisite: Permission of instructor.

The analysis of data of means of frequency distributions and statistics which describe them. Other topics studied are charts and graphs; introduction to probability; central tendency, dispersion, and skewness; the normal distribution; and correlation and regression.

502. Introduction to Probability and Statistics II. Three hours.

Prerequisite: Math 501.

Basic principles of statistical inference; sampling; regression and correlation; vectors, matrices; Markov chains; linear programming and game theory.

503. Introduction to Analysis. Three hours.

Prerequisite: Permission of instructor.

This course examines some of the more important topics usually dis-

cussed in the elementary calculus sequence, thus helping to prepare the student to teach such material in the secondary school system. Introductory material including logic, set theory, and functions is provided. Calculus topics covered will include sequences, series, limits, continuity, the derivative, and the Riemann integral.

400-level courses which may be taken for graduate credit:

- 405. Numerical Analysis I. Three hours.
- 406. Numerical Analysis II. Three hours.
- 413. Algebra for Elementary Teachers. Three hours.
(for Elementary Education graduate students)
- 417. Algebraic Systems. Three hours.
- 423. Geometry II. Three hours.
- 429. Probability and Statistics II. Three hours.
- 432. Intermediate Analysis II. Three hours.
- 435. Partial Differential Equations. Three hours.
- 439. Topology I. Three hours.
- 450. Complex Variables. Three hours.
- 470. Introduction to Operations Research. Three hours.

MUSIC

Master of Music; Master of Arts in Education (Music major or minor)

Master of Music

This program is designed for students who seek a career in performance, symphony orchestra, or private studio teaching in college or community. In addition to the general Graduate College requirements, a student pursuing this program must have a Bachelor's degree in music with an average point standing in music subjects of not less than 3.0. In addition, he must be able to demonstrate skills and capacities by examination in Music Theory, Music Literature and in the chosen area of performance.

A minimum of thirty graduate hours is required. Included in the thirty hours must be fifteen hours in the performance area; twelve hours selected from Music Literature, Theory, Composition, Orchestration or

Music Psychology; and three elective hours. At least one course is required in both Music Literature and in Music Theory.

There is no foreign language requirement except in the case of a voice major who will be expected to make up any deficiency. In lieu of a thesis, a full length public recital is required.

Master of Arts in Education (Music major or minor)

This program provides additional graduate coursework in music while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student majoring in music may take a minimum of 18 or a maximum of 21 hours in music, while the student minoring in music may take a minimum of 12 or a maximum of 15 hours in that department. The remaining hours will be taken in professional education courses.

Graduate Courses in Music

- 500. Seminar in Theory. Three hours.
This course is concerned with the various procedures of outstanding theorists with major emphasis on contemporary theories.
- 501. Analytical Techniques. Three hours.
A study of the technique of harmonic and contrapuntal analysis in various styles of the 16th, 17th, 18th, and 19th centuries.
- 510. The Teaching of Applied Music. Three hours.
An investigation of pedagogical problems in a specific performance area of music including the examination of teaching materials and repertoire, theory and implementation of tone production and technique, psychology of studio teaching, interpretation, public performance preparation and program planning.
- 511. Investigations in Music Education. Three hours.
A study of the problems and methods of research in music education. Includes the application of pure and action research to given situations and the investigation of published research in music education.
- 513. Directed Individual Study. Three hours.
Research projects in music education on an individual basis.
- 514. General Music in The Secondary Schools. Three hours.
Training the music teacher to provide orientation experiences in the area of general music. The development of musical knowledge in junior and senior high school non-performers.
- 515. Administration and Supervision of Public School Music. Three hours.
An investigation of current trend in educational thought and the implications for administration, instruction and evaluation in public school instrumental music.

530. **Music Literature. Three hours.**
An investigation of a specialized area not covered extensively in other advanced music literature courses, e.g. "early musical notation," "the classical period," "art song repertoire" etc.
531. **Medieval and Renaissance Music. Three hours.**
A survey of musical style and form (ca. 500-1600).
532. **The Symphony. Three hours.**
The symphony from its beginning to the twentieth century with emphasis on listening and analysis.
533. **Twentieth Century Music. Three hours.**
A study of the principal trends in contemporary music with emphasis on listening.
534. **Opera. Three hours.**
A study of musico-dramatic forms from Greek lyric theater through contemporary opera.
535. **Baroque Music. Three hours.**
A survey of musical style and form (ca. 1600-1750) with special emphasis on the music of J. S. Bach.
536. **Nineteenth Century Music. Three hours.**
A study of musical romanticism from Hoffmann and Weber through Richard Strauss.
537. **Chamber Music. Three hours.**
A survey of the literature of small instrumental groups. Special emphasis on the sonata and string quartet.
538. **Directed Individual Study. Three hours.**
Closely supervised private research culminating in a scholarly paper or research report.
539. **Piano Literature. Three hours.**
A survey of piano literature up to and including the twentieth century.
559. **Graduate Recital. Two hours.**
A full length public recital required of candidates for the Master of Music Degree in performance.

The following 400-level courses may be taken for graduate credit:

402. **Counterpoint I. Three hours.**
403. **Counterpoint II. Three hours.**
406. **Composition. Three hours.**
407. **Orchestration and Band Arranging. Three hours.**
415. **Choral Methods. Three hours.**
416. **Instrumental Methods. Three hours.**

440. **Choral Union. One hour.**
441. **Choir. One hour.**
443. **Band. One hour.**
444. **Orchestra. One hour.**
449. **Chamber Music. One hour.**
445. **Madrival Singers. One hour.**
450. **Piano. Two hours.**
451. **Voice. Two hours.**
453. **Strings. Two hours.**
454. **Organ. Two hours.**
455. **Woodwinds. Two hours.**
456. **Brasses. Two hours.**
457. **Percussion. Two hours.**
458. **Harp. Two hours.**

PHILOSOPHY AND RELIGION

See Master of Arts in Humanities in Interdepartmental degree programs. Philosophy is an integral part of the Master of Arts in Humanities and the Master of Arts in College Teaching in Humanities programs. In addition graduate courses in philosophy and religion are significant supporting areas in other graduate programs.

Graduate Courses in Philosophy

500. **Humanities Seminar. Three hours.**
A synthesis of the major ideas and movements in the fields of art, architecture, music, literature, philosophy, religion, and history during the contemporary period (1789-1970) of Western Civilization.
501. **Readings in Philosophy. Three hours.**
An intensive study of selected philosophic classics or readings in a selected area of philosophy. May be repeated for different topics.
502. **Seminar in Ancient and Medieval Philosophy. Three hours.**
Study of selected topics in ancient and medieval philosophy. May be repeated for different topics.

503. **Seminar in Modern Philosophy. Three hours.**
Study of selected philosophers or topics in modern philosophy. May be repeated for different topics.
504. **Seminar in Contemporary Philosophy. Three hours.**
Study of selected philosophers or topics in contemporary philosophy. May be repeated for different topics.
599. **Humanities Thesis. Six hours.**

The following 400-level courses may be taken for graduate credit:

400. **Contemporary Philosophy. Three hours.**
401. **Readings in Philosophy. Three hours.**
405. **Existentialism. Three hours.**
420. **Philosophy of History. Three hours.**
425. **Analytic Philosophy. Three hours.**
440. **Metaphysics and Epistemology. Three hours.**
450. **Philosophy and Religion in the Middle Ages. Three hours.**

Graduate Courses in Religion

400-level courses which may be taken for graduate credit:

400. **Readings in Contemporary Religious thought. Three hours.**
401. **Seminar in Religion. Three hours.**
420. **Studies in Pauline Theology. Three hours.**
440. **Judaism. Three hours.**
450. **Philosophy and Religion of the Middle Ages. Three hours.**

PHYSICAL EDUCATION AND RECREATION

Master of Science in Physical Education; Master of Arts in Education (Physical Education major or minor); Master of Arts in Education (Recreation minor); Master of Public Service (Recreation and Park Administration option; see pages 100 and 126.)

Diversified programs leading to additional depth or breadth in a selected area of physical education and recreation are available to candidates for graduate degrees. A highly qualified staff and outstanding facilities compliment these graduate offerings. Contemporary re-

search and literature are fundamental in all courses. The department maintains laboratories for study of human motor behavior and physical performance and strong encouragement is given students to actively pursue personal research interests.

Master of Science (M.S.) Degree in Physical Education

Although most candidates for a master's degree are interested in public school teaching, occasionally some students would receive greater benefit from a degree program with total concentration in Physical Education. The M.S. Degree in Physical Education has been designed to meet the needs of these individuals. Considerable leeway in course selection is available allowing the candidate to acquire great depth within this specific academic discipline. This program requires both a demonstration of competency in use of a research tool and the completion of an acceptable Master's thesis.

Required: PER 501, 520, and 560.

Selective with advisor's consent: 9-18 hours of Physical Education courses.

Elective: 0-9 hours from allied areas.

Master of Arts in Education (Physical Education major or minor; Recreation minor)

This program provides additional graduate coursework in physical education and recreation while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification.

Physical Education Major

Required: 15-21 hours in physical education including PER 501 and 502. Two courses to be selected from PE 503, 504, and 505. Remaining hours in physical education are electives.

Professional Education: 9-15 hours (see Education, Secondary).

Physical Education Minor

Required: 12-15 hours in physical education including PER 502 and either PER 501 or Education 500*. 3-6 hours to be selected from PE 503, 504, 505. Other physical education courses to be taken to allow a minimum of 12 hours.

Professional Education: 15-18 hours (see Education, Secondary).

*If Education 500 is chosen rather than PER 501, an additional elective to total 12 hours will be necessary within the physical education course offerings.

Recreation Minor

Required: Twelve hours or more to be selected with consideration of the coordinator of recreation from: PER 501, 520, 530, Recreation 513, 515, 517, 519, 521, 481, 484, or 489.

Professional Education: 15-18 hours (see Education, Secondary).

Master of Public Service

(Recreation and Park Administration Option)

This program is a non-teacher certification plan with nine hours required in the public service core and twenty-one hours available in recreation and/or related areas. It is specifically designed to prepare individuals for positions of leadership in recreation and park administration. In addition to the core requirements (page 124), the following courses are within the recreation sequence from which fifteen hours may be selected: P.E.R. 501, P.E.R. 520, P.E.R. 530, Rec. 513, Rec. 515, Rec. 517, Rec. 519, Rec. 521, Rec. 481, Rec. 483, Rec. 484, and Rec. 489. In addition, six hours may be selected from courses within the field of recreation or from allied areas.

General Courses:

P.E.R. 501. Analysis of Research in Physical Education and Recreation. Three hours.

A critical analysis and review of selected studies in the physical education and recreation literature related to methods, materials, techniques, and planning of research studies used and conducted by the profession. (To be taken in first term of enrollment at Western Kentucky University.)

P.E.R. 520. Interpretation of Physical Education and Recreation Data. Three hours.

Prerequisite: PER 501.

Application of statistical techniques to physical education and recreation data. Basic principles and techniques in designing and analyzing physical education and recreation problems are emphasized.

P.E.R. 530. Independent Investigations in Physical Education or Recreation. One to three hours.

Prerequisites: PER 501 and consent of instructor.

Special research problems or projects of organizational, administrative, or supervisory nature in the areas of physical education or recreation.

P.E.R. 560. Thesis. Six hours.

The master's thesis is to be directed by a member of the Graduate Faculty of the Department.

Physical Education Courses:

P.E. 502. Philosophical Bases of Physical Education and Athletics. Three hours.

A comparative analysis of the influence of major educational philosophies upon physical education and athletics is made with a view to preparing the student to develop a practical and usable personal philosophy of modern physical education and athletics.

P.E. 503. Psychological Bases of Motor Performance. Three hours.

The nature and bases of motor learning are studied. A critical analysis of mental and emotional factors involved in the acquisition and evaluation of motor performance. Application to various activities is presented.

P.E. 504. Physiological Bases of Motor Performance. Three hours.

Application of physiological, mechanical, and kinesiological principles and controls to motor activity. Inferences on improving instructional practices are presented.

P.E. 505. Foundations of Curriculum Construction. Three hours.

Principles, procedures, and criteria for curriculum construction and revision, course building, and lesson planning in Physical Education. Critical evaluation of typical courses of study at various grade levels. The development of written guides is presented.

P.E. 510. Seminar: Facilities, Construction, and Equipment. Three hours.

Principles, standards, practices and problems in planning, constructing, administering the building program, maintaining the facilities and in purchase and care of equipment. Includes such topics as evaluation of existing facilities, survey of needs, equipping the plant, program planning, development of educational specifications, selecting of an architect, and attaining efficiency and economy through design and construction.

P.E. 511. Theory in Administration and Supervision of Physical Education and Athletics. Three hours.

A study of the implications of basic administrative theory and research for the administration of Physical Education and athletic programs.

P.E. 512. Seminar: Administration Problems in Physical Education and Athletics. Three hours.

Organization and control over programs of physical education and athletics at various education levels. A discussion of controversial issues in athletics and practice in seeking solutions to them.

400-level courses which may be taken for graduate credit:

- 490. Tests and Measurements in Physical Education. Three hours.
- 491. Physical Diagnosis and Corrective Physical Education. Three hours.

Graduate Courses in Recreation

- Rec. 513. Organization, Administration, and Supervision of Parks, Playgrounds, and Recreation Programs. Three hours.**
Detailed study of the organization and administration of recreation of federal, state, and local levels, financing, budget, and personnel selection and supervision, departmental organization, administration practices, legislative provision, governmental controls, and correlation and integration of the entire recreation program into the culture and society of the community.
- Rec. 515. Planning and Maintenance of Park and Recreation Facilities. Three hours.**
Principles and problems involved in planning and maintenance of park and recreation facilities are considered. Relationship of facilities to program needs are discussed. Field trips to areas and facilities are conducted.
- Rec. 517. Construction and Utilization of the Survey in Recreation. Three hours.**
Planning, application, and evaluation of the survey as a means of determining recreation program needs in selected settings. Community recreation surveys are conducted as class projects.
- Rec. 519. Fiscal Practices for the Administrator of Recreation and Parks. Three hours.**
Construction of the budget, financial record-keeping, purchasing procedures, personnel problems, and office management related to recreation constitute pertinent topics of the course. Insurance programs and legal problems are also included.
- Rec. 521. Public Relations for Parks and Recreation Programs. Three hours.**
Effective communication among colleagues, program participants, and the public through the use of all types of audio-visual devices and techniques are encompassed in the course.

400-level courses which may be taken for graduate courses:

- Rec. 481. Camp Administration and Outdoor Recreation. Three hours.
- Rec. 483. Social Recreation. Three hours.
- Rec. 484. Community Centers and Playgrounds. Three hours.
- Rec. 489. Professional Field Experiences in Recreation. One to Eight hours.

PHYSICS AND ASTRONOMY

Master of Science in Physics; Master of Science in Engineering Physics; Master of Arts in Education (Physics minor)

The Department of Physics and Astronomy presently consists of seventeen faculty members. Entering graduate students will find, through careful advising, a program of study commensurate with their needs. In addition to normal course work, students are exposed to current developments in physics and related disciplines through departmental and college-wide colloquia.

The physical facilities of classrooms and laboratories for physics and astronomy are located in the Kelly Thompson Science Complex. Included in these facilities are a machine shop with two full-time technicians, a student shop, an electronic shop with an engineer, and computer facilities (two PDP 8/T's and one IBM 360/40). The science library, containing ample periodicals and reference materials, is located in the same wing of the building.

Admission

Any correspondence related to admission to the Graduate College should be directed to the Dean of the Graduate College or the Department of Physics and Astronomy. Proper forms and instructions will be sent to you upon request.

Graduates of accredited four-year colleges may be admitted to graduate study. To be eligible for admission to the Graduate College, the applicant must present an undergraduate grade point average of at least 2.5 based on the 4.0 system. The Department of Physics and Astronomy requires a grade point average of at least 3.0 to be admitted in good standing. Promising students will also be accepted; however, they may expect to be required to take some courses of a transitional nature if their undergraduate preparation is incomplete, in order to advance to the level of regular first-year graduate courses.

All applicants should provide scores from the Aptitude Test of The Graduate Record Examination. All foreign students must submit scores from the TOEFL examination.

The graduate programs in the Department of Physics and Astronomy are flexible to the extent that a student can select up to nine hours of related courses in biophysics, physical chemistry, geophysics, astronomy, or environmental science to prepare for a career in those fields which "bridge" two or more of the traditional disciplines.

Master of Science in Physics. The *Master of Science* degree is designed to prepare students to continue graduate work at the Ph.D. level in physics or some closely related discipline. The applicants should have physics preparation at the undergraduate level, extensive enough to include an intermediate course in mechanics (Stevenson or Symon), electricity and magnetism (Ritz and Milford), and modern physics (Weidner and Sells). Preparation in mathematics should include ordinary differential equations, vector analysis, and possibly functions of a complex variable.

The M.S. in Physics requires 30 semester hours, no more than six of which may be thesis research numbered 699. At least half of the twenty-four hours of regular work must be in courses numbered 500 and above. At least 15 hours of the regular course work must be in the student's major field of study. All graduate students in physics must satisfactorily complete two of the three graduate "core" courses:

540—*Electromagnetic Theory*

550—*Classical Mechanics*

580—*Quantum Theory*

The student wishing to satisfy the language requirement must select either German, French, or Russian. If the student elects the research tool (eg., computer programming, statistics) in lieu of the language requirement, his choice of courses must have the approval of the chairman of his graduate committee and the departmental chairman.

Each candidate for the M.S. in Physics is required to prepare and present an acceptable thesis. During the first semester of graduate study the student should confer with faculty members in order to discuss research interests and to determine what thesis problems are available. Upon the selection of a research topic, the Department will recommend to the Dean of the Graduate College the faculty member to serve as research advisor. The student's graduate committee will follow his progress, supervise the preparation of the thesis, and conduct the final oral examination.

A final examination (oral and/or written) is given to all candidates. Such an examination will include defense of the thesis and may include other subjects.

The **Master of Science in Engineering Physics** is to provide additional formal academic training to students to assume positions in industrial or

governmental laboratories. More emphasis is placed on the applied nature of physics in designing the curriculum.

In addition to general Graduate College requirements, the students should have a major in one of the fields of physical science or engineering.

Twenty-four semester hours of course work and six semester hours of thesis research are required. Normally, 15 to 18 semester hours will be taken in physics, and six to nine semester hours in a minor will be permitted. There is no language requirement.

The student's graduate thesis advisor will be assigned upon the completion of 15 semester hours of course work and after selection of a thesis topic. A thesis reporting the results in accordance with the regulations of the Graduate College must be submitted.

A final examination (oral and/or written) is given to all candidates. Such an examination will include defense of the thesis and may include other subjects.

The **Master of Arts in Education** with a physics minor is designed to enhance the competence of physics and science teachers at the secondary school level. Courses in physics, 12 (minimum) to 21 (maximum) semester hours, are designed to familiarize the student with modern high school materials and curricula while strengthening his overall physics background. The remainder of the thirty hours is in professional education. The student following this program must meet all requirements for Standard High School certification.

Financial Aid. The Department of Physics and Astronomy has several teaching assistantships available, ranging from \$2200 to \$2800 for the nine-month academic year. These require that the student assist in the teaching or instruction of courses and laboratories in the department. The total number of contract hours per week is approximately six. If desired, summer assistantships can be arranged. The graduate students are provided ample office facilities for study and student consultation. The Department of Physics and Astronomy is located in a completely air-conditioned building and provides comfortable surroundings in which to study.

Research. Major pieces of equipment or facilities which are available to support research are: radio observatory located 12 miles from the campus, X-ray diffraction system, ultra-high vacuum facility, neutron generator, multi-channel analyzer, thermoluminescent dosimeter, infrared

spectrometer, visible spectrometer, x-ray irradiation facilities, electron microscope, nuclear magnetic resonance spectrometer, and two PDP 8/I digital computers with analog-to-digital input. These instruments provide ample opportunity for the student to conduct meaningful research.

Presently faculty members are actively engaged in research in the following areas: atomic collisions, biophysics, electron physics, nuclear physics, optical physics, photosensitization, planetary radio astronomy, properties of nearby galaxies, radiation dosimetry, and theoretical physics.

Graduate Courses

510. Methods of Mathematical Physics I. Three hours.

Prerequisite: Differential Equations.

Selected topics from the mathematical methods of classical physics.

520. Atomic and Molecular Spectra. Three hours.

Prerequisite: Physics 480

A study of the structure of atomic and molecular spectra including quantum mechanical energy states, wave mechanical rules for combining momenta and magnetic moments, the Stark effect, and the Zeeman effect.

530. Statistical Mechanics. Three hours.

Prerequisite: Physics 450, 480

An introduction to statistical theories of many body systems and their thermodynamic consequences. Topics include the Boltzmann equation, Liouville's theorem, phase space, ensemble theory, entropy and probability, partition functions, equations of state, and quantum statistics.

540. Electromagnetic Theory. Three hours.

Prerequisite: Physics 440

Electrostatics, magnetostatics, and potential theory; Maxwell's electrodynamics; the theory of wave optics, refraction, interference and diffraction; radiation of electric and magnetic multipole fields.

550. Classical Mechanics. Three hours.

Prerequisite: Physics 450

Dynamics of particles and rigid bodies, the methods of Lagrange and Hamilton, the Hamilton-Jacobi equation, and the theory of small vibrations.

580. Quantum Theory. Three hours.

Prerequisite: Physics 480

Wave and matrix mechanics, general operator methods, angular momentum, symmetry principles and conservation theorems, variational principle and elementary perturbation theory.

598. Graduate Seminar. One hour.

Discussions of recent and current literature on developments in experimental and theoretical physics.

610. Methods of Mathematical Physics II. Three hours.

Prerequisite: Physics 510

Selected topics from the mathematical methods of quantum physics.

660. Theory of Solids. Three hours.

Prerequisite: Physics 480

A study of matter in the condensed state emphasizing quantum mechanical aspects, the behavior of electrons in solids and the thermal and magnetic properties of matter.

670. Theoretical Nuclear Physics. Three hours.

Prerequisite: Physics 480

Static properties of nuclei, descriptive aspects of radioactivity and nuclear reactions, systematics of nuclear energies, nuclear models, nuclear decay, nuclear reactions, and nuclear forces.

675. Advanced Topics in Physics. One to Three hours.

Prerequisites: Graduate standing and permission of the instructor.

Each topic is a course in directed study under the supervision of a faculty member. Available for full credit in subsequent sessions with change of content.

699. Research. One to Six hours.

Courses which may be taken for graduate credit toward the M.A. in Education (Physics minor):

501. Classical Developments in Physics. Three hours.

A general review of classical physics for the junior high and high school teacher, covering the discovery of physical laws, the origin of forces, motion, energy, momentum, conservation principles, wave phenomena, and electromagnetics. The goal is comprehension of the basis and nature of physical law, and the ability to convey this insight to others.

502. Modern Developments in Physics. Three hours.

A general review of quantum physics for the junior high and high school teacher covering atomic structure, the nucleus, elementary particles, probability and uncertainty, and special relativity. The impact of twentieth century discoveries on the foundations of physical law will be emphasized. The goal is awareness of the vitality and influence of physics and the ability to convey this to others.

503. Physics Demonstrations and Laboratory Exercises. Three hours.

Designed to acquaint the junior high and high school teacher with laboratory equipment and demonstrations designed for use in secondary education. A laboratory library containing approximately sixty experiments, in place, will enable the teacher to become ex-

perienced with equipment. The purpose of the course is to develop confidence in the teacher and instill the desire to enhance his lectures and laboratory instruction through the use of new techniques and apparatus.

505. Investigations in Physics. Three hours.

A literature search and study relating to a special topic of interest to the student with potential benefit to the teaching of physics.

400-level courses which may be taken for graduate credit:

404. Experimental Physics 4. Optics. One hour.

405. Astronomy for Teachers. Three hours.

406. Experimental Physics 5. Solid State. One hour.

407. Experimental Physics 6. Nuclear. One hour.

409. Experimental Physics 7. Research Techniques. Two hours.

414. Introductory Astrophysics. Four hours.

425. Modern Concepts of Physics. Three hours.

440. Electricity and Magnetism. Three hours.

441. Optics. Three hours.

450. Theoretical Mechanics. Three hours.

460. Solid State Physics. Three hours.

465. Geophysics. Three hours.

470. Nuclear Physics. Three hours.

475. Selected Topics in Physics. One to three hours.

480. Quantum Mechanics. Three hours.

PSYCHOLOGY

Master of Arts in Psychology; Master of Arts in Education (Psychology major or minor)

Master of Arts in Psychology

This program provides preparation for students who seek teaching positions at the college level and provides specialized skills for students who wish to pursue careers in industry, government, school or clinical psychology.

In addition to general Graduate College requirements, the student must present a grade point average in psychology of B. Promising students with limited grade or course deficiencies may be considered for admission to the program upon completion of an approved program for the removal of these deficiencies. Persons admitted to the program should have a minimum of eighteen semester hours in psychology including the following courses or their equivalents: (1) Methods of Experimental Research and Statistics; (2) History and Systems of Psychology.

Minimum requirements for the Master of Arts in Psychology are thirty semester hours of graduate credit in courses approved by the Department of Psychology, including six hours of thesis credit. At least one half of the course requirements must be completed successfully in courses open only to graduate students, and the courses constituting a student's course of study must form a uniform and coordinated program as determined by the student's departmental graduate advisory committee.

Basically the curriculum will consist of a sequence of core courses, several additional principles courses essential to a strong foundation in psychology, and some specialized courses which permit the student a degree of specialization. The core courses are:

563—Psychometric Theory

512—Seminar in Experimental Design

Those students who plan to continue their graduate education in psychology beyond the M.A. degree would be advised to select electives which represent a wide range of principles courses representative of the several subdisciplines within psychology. The master's program would then provide the broad foundation necessary for more advanced work.

Up to six semester hours in courses in departments other than psychology may be counted toward the thirty hours master's program with the consent of the department head. A thesis carrying six hours credit is required of all candidates for the Master of Arts in Psychology.

In addition to the course work and thesis, all candidates for the M.A. in Psychology must pass a final written and/or oral examination covering the thesis and major and minor fields of study.

Prior to the final examination the applicant must either: (a) Demonstrate reading ability sufficient to do scholarly research in a foreign language, or, (b) Demonstrate that he has mastered the appropriate research tools which will contribute to his research proficiencies.

Master of Arts in Education (Psychology major or minor)

This program provides additional graduate coursework in psychology for the public school psychology teacher. Students following this program must meet all requirements for Standard High School certification. The student majoring in psychology may take a minimum of 18 or a maximum of 21 hours in psychology, while the student minoring in psychology may take a minimum of 12 or a maximum of 15 hours in that department. The remaining hours will be taken in professional education courses. The thesis is recommended.

Graduate Courses in Psychology

510. Advanced Educational Psychology. Three hours.

Psychology of learning. Different psychological theories; psychological methods and techniques; experimental literature.

511. Psychology of Learning. Three hours.

A study of theories of learning including conditioning, social learning, reinforcement, problem solving, motivation, and structure of the learning situation.

512. Seminar in Experimental Design. Three hours.

This course is a basic required course for all graduate students in psychology. It is designed to develop an understanding of the principles of experimental design and the application of appropriate statistical techniques. Included in this course will be the design of an experimental project.

520. Psychology of Individual Differences. Three hours.

A survey of research and theory in developmental aspects of behavior from the prenatal period to adulthood with emphasis upon individual differences.

521. Advanced Child Psychology. Three hours.

A course in child psychology for graduate students, with particular emphasis upon a critical review of current research in child development.

522. Advanced Adolescent Psychology. Three hours.

A critical review of current research and theories in the area of adolescent psychology as they relate to physical, social emotional, and intellectual development.

523. Cognitive Theory. Three hours.

A study of information processing, thinking and cognition. This course will cover major theories and research techniques in the area of cognitive theory.

540. Behavior Problems of Childhood and Adolescence. Three hours.

A descriptive and theoretical survey of the major forms of psychopathology in children and adolescents, with emphasis upon recent research, classification systems and developmental patterns. This course will also cover clinical and school treatment of neurotic, psychotic, sociopathic, organic syndromes, and other behavior problems encountered in the school setting.

541. Introduction to Clinical Psychology. Three hours.

An introduction to methods and research in clinical psychology with an emphasis upon the use of clinical reports prepared for schools and clinics.

550. Personality Theory. Three hours.

A survey of basic psychological principles underlying the study of personality in relation to a social environment. Among the topics discussed are: theories of personality, the process of socialization of the individual, factors influencing adjustment to social environment.

551. Social Psychology of Organizations. Three hours.

Designed to provide an understanding of the dynamics of groups and organizations. A survey of current theory and research in psychology of organizations.

560. Individual Intelligence Testing. Three hours.

Administration and interpretation of the WISC, WAIS and Stanford Binet as tools of education, occupational guidance, and clinical diagnostics.

561. Practicum in Individual Intelligence Testing. One to three hours.

Prerequisite: Psychology 560.

Supervised experience in the administration and interpretation of tests used in an educational or clinical setting for the diagnosis of intellectual and learning problems. This course will include development of realistic recommendations which can be used by teachers and clinicians to modify existing individual programs.

562. Psycho-Educational Assessment. Three hours.

Prerequisite: Psychology 560.

Supervised training in the use of diagnostic procedures with children who are mentally retarded, speech impaired, deaf, visually handicapped, cerebral palsied, or perceptual-motor handicapped.

563. Tests Construction and Psychometric Theory. Three hours.

An introduction to psychometrics with an emphasis upon both technical and ethical problems which are involved in the use and construction of psychological measurement instruments. The student will survey existing tests within the field and learn to communicate test results to both professionals and non professionals. This will be a required course for all graduate students in psychology.

- 590. Readings or Research in Psychology. One to three hours.**
Prerequisite: Departmental permission only.
Individual programs of reading or conduct of research studies. Arrangements must be made for supervision before enrollment in this course.
- 591. Internship in College teaching. One to two hours.**
Prerequisite: Permission only.
A study of the problems and methods of teaching at the college level. Students enrolled in this course will be concurrently teaching a college course in introductory or general psychology.
- 599. Master's Thesis in Psychology. Six hours.**
Open only to candidates for the M.A. degree who are engaged in thesis research or writing.
- 640. Psychopathology. Three hours.**
Prerequisite: Permission only.
A descriptive and theoretical survey of the major forms of child and adult psychopathology with emphasis upon recent research, classification systems, modification of deviant behavior and developmental patterns of learning and motivation variables. Experimental studies including the experimental induction of abnormal behavior in animals will be reviewed.
- 641. Clinical Interviewing and Psychotherapy I. Two hours.**
Permission only.
A study of selected theories and techniques of psychotherapy and counseling involving academic, vocational, learning, and emotional problems. Consideration of group therapy, research, clinical topics, and professional and ethical issues. Course experiences include role playing, tape recorded interviews, and analysis of case materials. (Concurrent enrollment in 662 is required.)
- 642. Clinical Interviewing and Psychotherapy II. Two hours.**
Prerequisite: 641. Permission only.
A continuation of 641 with an emphasis upon group, family and marital psychotherapy. (Students will concurrently enroll in 662.)
- 660. Psychological Evaluation. Two hours.**
Prerequisite: 560. Permission only.
An introduction to personality diagnosis using objective and projective techniques with an emphasis upon current research interpretation, and communication of assessment information. (Concurrent enrollment in 662 required.)
- 661. Psychological Evaluation II. Two hours.**
Prerequisite: 660. Permission only.
A continuation of 660 with emphasis upon the integration of data obtained through various assessment instruments and techniques.

Focus on specialized procedures for the evaluation of personality, functional disorders, perceptual-motor problems, and organic and intellectual deficit in clinical, educational, and rehabilitation settings. (Concurrent enrollment in 662 required.)

- 662. Practicum in Psychological Practice. One to three hours.**
Students enrolled in 641, 642, 660, or 661 will receive supervised practice in schools, clinics, specialized training centers and hospitals. Those preparing careers in school or clinical psychology will enroll in 662 for a minimum of two semesters.

The following 400-level courses may be taken for graduate credit:

- 400. History and Systems of Psychology. Three hours.**
- 410. Psychology of Learning. Three hours.**
- 430. Psychology of Exceptional Children. Three hours.**
- 431. Psychology of Mental Retardation. Three hours.**
- 432. Psychology of the Gifted. Three hours.**
- 440. Abnormal Psychology. Three hours.**
- 450. Personality Theory. Three hours.**

SOCIOLOGY AND ANTHROPOLOGY

Master of Arts in Sociology; Master of Arts in Education (Social Science Area major); Master of Arts in Education (Sociology minor)

Master of Arts in Sociology

This program is designed to provide a sound methodological and theoretical foundation for students who contemplate pursuing graduate studies beyond the master's level; to give a thorough preparation for those students who seek teaching positions at the college level; and also to transmit the basic specialized skills for those students who elect to pursue careers in industry or governmental service.

In addition to general Graduate College requirements, the student should have a B average for all undergraduate work in Sociology. Promising students with limited grade or course deficiencies may be considered for admission to the program upon completion of an approved program of study for the removal of the deficiencies.

Persons admitted to the program should also have previously had a minimum of eighteen hours in Sociology including the following courses or their equivalent:

Methods of Social Research (390), Social Statistics (350), History of Social Thought (360), and Contemporary Sociological Theory (385).

In unusual circumstances where special competence has been developed through experiences other than traditional course-work or extensive course-work in related disciplines, the above departmental requirements may be relaxed or adjusted by approval of the Department Head.

Minimum requirements for the Master of Arts in Sociology are thirty semester hours of graduate credit in courses approved by the Department, including six hours of thesis credit. At least one half of the course requirements must be completed successfully in courses open only to graduate students. The courses constituting a student's program must form a uniform and coordinated whole as determined by the student's departmental graduate advisory committee.

Basically the curriculum will consist of a sequence of core theoretical and methodological courses and several additional principles courses essential to a strong foundation in sociology. Specialization will be directed toward three major areas: (1) criminology and corrections; (2) industrial sociology and manpower research and development; and (3) urban sociology and demography.

The purpose of the criminology and corrections emphasis is to provide professional education for those students interested in careers in the fields of correctional administration, probation and parole, institutional program management, and delinquency control programs. In addition, it is intended to provide academic education in criminology with special emphasis on evaluation and research.

The purpose of the industrial sociology and manpower research and development emphasis is to give the student the specialized training necessary to pursue a career with industry, government, or foundations in industrial research, human resource development programs, and applied manpower development.

The purpose of the urban sociology and demography emphasis is to provide the student with the appropriate knowledge and skills necessary for careers with industry, government, or foundations in the fields of urban affairs, population analysis and forecasting, community development, and urban environment research.

All students enrolled in the Master's program will be required to take the following core courses: Sociology 580, 590, 595, 596, 597 and 496. In addition, all students who are candidates for the Master's Degree are required to attend the following course sequences: Sociology 598-599 (two semester hours credit for the sequence). The remaining semester hour credits can be selected from a variety of general and specialized course offerings.

Up to six semester hours in courses in departments other than sociology may be counted toward the thirty hours master's program with the consent of the department head.

A thesis carrying six hours credit is required of all candidates for the master's degree.

In addition to the course work and thesis, all candidates for the master's degree must pass a final written and/or oral examination covering the thesis and major and/or minor fields of study.

Prior to the final master's examination the applicant must either:

1. Demonstrate reading ability sufficient to do scholarly reading in a foreign language appropriate to his major area, or
2. Demonstrate that he has mastered the appropriate research tools which will contribute to this research proficiencies.

Master of Arts in Education (Social Science Area major; Sociology minor)

This program, designed for the public school teacher, provides graduate coursework in sociology and anthropology. The student following this program must meet all requirements for Standard High School certification. The student wishing to pursue this program with emphasis in sociology is advised to follow the Social Science Area major which allows him to take 9-21 hours within the Department of Sociology and Anthropology. One who minors in sociology may take a minimum of 12 or a maximum of 15 hours in the department. The remaining hours will be taken in professional education courses.

GRADUATE COURSES IN SOCIOLOGY

505. Elements of Sociology. Three hours.

Prerequisite: Graduate standing.

Designed as an advanced first course in basic sociology for the non-sociology graduate student. The conceptual problem of interaction is examined in terms of demography and ecology, culture and personality, and social structure and process.

- 520. Studies in Family Relations. Three hours.**
Prerequisite: Sociology 505, or six hours of sociology and consent of the instructor.
An analysis of the family institution; the impact of modern culture on the family.
- 530. Seminar in the Sociology of Deviant Behavior. Three hours.**
Prerequisite: Sociology 505 or nine hours of sociology courses and consent of the instructor.
A systematic overview of selected types of deviant behavior with particular emphases on criminality, delinquency, drug addiction, and alcoholism. Special attention will be given to current sociological theory and research in the field.
- 535. Probation and Parole. Three hours.**
Prerequisite: Sociology 505 or nine hours of sociology courses and consent of the instructor.
A survey of community treatment of convicted law violators, as part of the correctional process. Examines the role of probation and parole personnel. Attention is given the pre-sentence investigation and the selection, supervision and releasing of probationers and parolees. Includes appraisal of effectiveness, prediction of behavior during and after probation and parole as well as the administrative and judicial processes involved. May include field trips when practical.
- 545. Seminar in Society, Personality, and Behavior. Three hours.**
Prerequisite: Sociology 505 or nine hours of sociology courses and consent of the instructor.
The course will focus on the study of inter-personal relations in different situations and from various perspectives. Among the concepts and problems to be considered are attitudes, norms, values; crucial factors in motivation and the actor's definition of the situation. Extensive observation of natural groups and experimental manipulation of arranged groups will provide data for testing specific hypotheses.
- 564. Demography. Three hours.**
Prerequisite: Sociology 505 or nine hours of sociology and consent of the instructor.
An advanced course in the quantity and quality of population. It will consist of a review of the demographic processes such as morality, fertility and migration, with emphasis on measurements, methods, and analytical techniques. The course will also include a review of important theories and issues in demography.
- 565. Studies in the Community. Three hours.**
Prerequisite: Sociology 505 or six hours of sociology, and permission of the instructor.
Ecological and social concepts of the community; the structure and function of the community.

- 566. Industry and Community. Three hours.**
Prerequisite: Sociology 505 or nine hours of sociology.
Analysis of industry in its community context exploring the interaction of industry with its immediate environment; social structure of the work-place as an extension of community; the impact of industry on community organization; the interaction of man, machine and colleague group within industrial organization; occupational roles, career patterns, social control within occupations and professions; and the social aspects of industrial conflict.
- 570. Studies of Social Systems. Three hours.**
Prerequisite: Sociology 505 or nine hours of sociology and permission of the instructor.
Use of organizational theory and its application to social systems.
- 572. Seminar in Social Change. Three hours.**
Prerequisite: Graduate standing as a sociology major or 18 hours of sociology.
A seminar focusing upon the various approaches to social change and social disorganization as dealt with by the major sociological theorists, both past and present. The origin, nature, consequences, and future outcome of social change and disorganization will be given consideration.
- 575. Complex Organizations. Three hours.**
Prerequisite: Sociology 505 or nine hours of sociology.
Analysis of the goals, internal structure, and environmental relations of large organizations. Special emphasis is placed upon the emergence of bureaucracies, competing theoretical frameworks for viewing organizations, and the analysis of organizational change.
- 580. Advanced General Sociology. Three hours.**
Prerequisite: eighteen hours of sociology.
An overview of sociology presented through an examination of the various sub-disciplines of the field and the most important developments in each. Particular attention will be paid to recent research and theory in the various sub-fields.
- 590. Sociological Research Design and Analysis. Three hours.**
Prerequisite: eighteen hours of sociology.
The examination of concept definition, model building, and research design appropriate to problem and data, including a review of representative research studies and students' designs. The course will include a schedule of readings, field work, reports, and discussion designed to acquaint the sociology major with advanced social research methodology, techniques, and procedures.
- 595. Seminar in Sociology Theory. Three hours.**
Prerequisite: eighteen hours of sociology.
An analysis of current sociological theories, including a survey of recent approaches to the construction and application of systematic

theoretical models. The course will include a schedule of readings, papers, and discussion designed to give the student a broad knowledge of sociological literature and theory.

596-597. Thesis Writing. Three hours each.

Prerequisite: The consent of the Department Head.

598-599. Proseminar in Contemporary Sociology. One hour each.

Prerequisite: The consent of the Department Head.

A topical seminar which examines recent issues and concerns of the profession as well as surveys a variety of current research endeavors in the field.

635. Seminar in Family Theory and Analysis. Three hours.

Prerequisite: Graduate standing as a sociology major or approval of the instructor.

An advanced seminar to serve as one of the concluding courses in the graduate sociology series. Major emphasis will be placed upon the basic theoretical and conceptual frameworks which have been used in past analytical studies of the family, as well as the use of these frameworks for current and future analyses. Emphasis will also be given to familiarizing the student with the large body of theoretical and empirical literature which exists on the family.

400-level courses in Sociology which may be taken for graduate credit:

400. Juvenile Delinquency. Three hours.

Prerequisite: Soc. 365 or consent of instructor.

410. Urban Sociology. Three hours.

Prerequisite: Nine hours of undergraduate sociology.

420. The Family. Three hours.

Prerequisite: Nine hours of sociology.

435. Correction and Confinement. Three hours.

Prerequisite: Soc. 365 or consent of instructor.

445. Industrial Sociology. Three hours.

Prerequisite: Soc. 346 or consent of instructor.

450. Occupations and Professions. Three hours.

Prerequisite: Soc. 346 or consent of instructor.

495-496. Directed Study. Three hours each.

Prerequisite: Consent of Department Head.

Graduate Courses in Anthropology:

507. Elements of Anthropology. Three hours.

Prerequisite: Graduate standing.

Designed as an advanced first course in basic anthropology for the non-anthropology graduate student. The course will be organized

around the concept of culture, discussing such problems as the nature of culture, the materials of culture, the structure of culture, aspects of culture, cultural dynamics, and cultural variation. The course will attempt a general overview of the field of anthropology.

555. Seminar in Anthropological Theory. Three hours.

Prerequisite: Consent of the Department Head.

An examination of the history and development of anthropological thought to the end of the nineteenth century and a survey of contemporary anthropological thought, with special reference to the methods and theory of scientific anthropology.

400-level courses in Anthropology which may be taken for graduate credit:

430. Prehistory and Archaeology of the Indians of North America. Three hours.

Prerequisite: Six hours of anthropology.

440. Cultural Anthropology. Three hours.

Prerequisite: Anthropology 150, 275 or consent of the instructor.

455. Culture and Personality. Three hours.

Prerequisite: Anthropology 150 or 275, Sociology 110 or Psychology 100.

495-496. Directed Study. Three hours each.

Prerequisite: Consent of Department Head.

Graduate Courses in Social Welfare:

530. Seminar in the Sociology of Deviant Behavior. Three hours.

Same as Sociology 530. Prerequisite: Sociology 505 or nine hours of sociology courses and consent of the instructor.

535. Probation and Parole. Three hours.

Same as Sociology 535. Prerequisite: Sociology 505 or nine hours of sociology courses and consent of the instructor.

400-level courses in Social Welfare:

400. Juvenile Delinquency. Three hours.

Prerequisite: Sociology 365 or consent of instructor.
(Same as Sociology 400)

425. Problems in Social Welfare. Three hours.

Prerequisite: Social Welfare 375.

435. Correction and Confinement. Three hours.

Prerequisite: Sociology 365 or the consent of the instructor.
(Same as Sociology 435)

495-496. Directed Study. Three hours.

Prerequisite: Consent of Department Head.

SPEECH AND THEATRE

Master of Arts in Education (Speech major or minor); Master of Arts in Education (Theatre minor)

Master of Arts in Education (Speech major or minor; Theatre minor)

This program provides additional graduate coursework in speech or theatre while being designed for the public school teacher. The student following this program must meet all requirements for Standard High School certification. The student majoring in speech may take a minimum of 18 or a maximum of 21 hours in speech, while the student minoring in speech or theatre may take a minimum of 12 or a maximum of 15 hours in that department. The remaining hours will be taken in professional education courses.

Graduate Courses in Speech

540. Seminar in Rhetoric and Public Address. Three hours.

Studies in theories of rhetoric through selected writers, periods, and topics. The application of rhetorical standards to the speech-making of selected speakers, movements, areas, and periods. The course may be repeated once for a different topic.

541. Seminar in Communication. Three hours.

Study of selected topics in communication theory. Suggested topics which may be covered: interpersonal communication, symbols in society, paradigms and models in communication theory, field research in communication, studies in political communication, etc. The course may be repeated once for a different topic.

545. Seminar in Speech. Three hours.

The content of the course will vary from semester to semester depending upon the background of the students enrolled. If offered as independent study, the person will have an opportunity to pursue areas in which he has had adequate preparation. If offered as a class, timely topics will be covered.

546. Seminar in Forensics. Three hours.

Seminar in Forensics will include a treatment of the principles and procedures involved in directing the standard forensic events. Events to be discussed are: debate, extemporaneous speaking, discussion, original oratory, analysis of a public address and some attention will be given to interpretative reading, duet acting, and story telling.

The following 400-level courses may be taken for graduate credit:

440. Experimental Studies in Communication. Three hours.

443. Contemporary Rhetoric and Public Address. Three hours.

444. Advanced Oral Interpretation. Three hours.

445. Research in Speech and Theatre. Three hours.

446. Classical Rhetoric. Three hours.

447. American Public Address. Three hours.

448. British Public Address. Three hours.

449. Speech Development. Three hours.

481. Introduction to Speech Pathology. Three hours.

Graduate Courses in Theatre:

550. Seminar in Theatre. Three hours.

The course is designed to give graduate students the opportunity to further their experience in theatre through research and application. Students select for investigation interpretative technical, or promotional problems according to their interests.

553. Restoration and Eighteenth Century Drama. Three hours.

Careful study of representative plays. Evaluation of influences, movements, and productions. Wide reading and individual study.

583. Shakespeare II. Three hours.

(See English 583)

400-level courses in Theatre which may be taken for graduate credit:

455. American Drama. Three hours.

456. Elizabethan Drama. Three hours.

457. Directing. Three hours.

458. Theatre Practicum. Three hours.

459. Modern Drama. Three hours.

INTER-DISCIPLINARY PROGRAMS

Master of Arts in Humanities; Master of Arts in College Teaching in Humanities; Master of Public Service (Agriculture option; Counseling option; Child Development and Family Living option; Recreation and Park Administration option; Regional Development option)

Master of Arts in Humanities

The graduate program in humanities is designed to give the student a broad background in the history of ideas with specialization in one period of Western civilization (ancient and medieval, modern or contemporary).

Minimum requirement for the Master of Arts in Humanities is thirty hours (including six hours of thesis credit) of graduate credit in courses approved by the advisor of the Humanities program. At least twelve hours (not counting thesis) must be in courses numbered 500 or above. Eighteen of the thirty hours must be in one major period of Western civilization such as: ancient and medieval, modern (Renaissance through eighteenth century) or recent (nineteenth century to present). In addition to these requirements, the following distribution of courses must be satisfied:

Philosophy—9 hours—At least one course from the period chosen for specialization; at least two 500-level courses.

History and English—9 to 15 hours with a minimum of three hours in each in the chosen period of specialization. At least one 500-level course from each department.

Other Humanities—3 to 6 hours; to be chosen from art, classics, modern languages, music, or religion.

Thesis—6 hours.

The student will select one of the three periods of Western civilization for his area of specialization. At least four of the courses and his thesis must deal with this period. His courses and research will be designed to give him a comprehensive and integrated knowledge of the history of ideas during that period. The rest of the student's courses may be used to acquaint him with the literature, history, religion, philosophy, art, and music of other periods.

The student must demonstrate a reading ability sufficient to do scholarly research in either French or German. If the student selects the period of ancient and medieval civilization as his area of specialization, either Greek or Latin may be substituted.

The student must pass a final written examination during the last semester before he intends to graduate.

The thesis must deal with the student's area of specialization, and it must give evidence of a significant amount of individual research and

must demonstrate a knowledge of the inter-relationships of several areas of the humanities. The research for the thesis will be supervised by a member of the graduate faculty in the department of Philosophy and Religion.

Master of Arts in College Teaching in Humanities: Thirty semester hours are required for this degree, at least fifteen of which must be in courses numbered 500 or above. At least twelve hours must be in one major period of Western civilization. By the time a student completes the MACT program, he must present a minimum of eighteen hours (at the undergraduate and graduate levels) of either English or History. During his last semester, the student must do some supervised college teaching under the direction of the Graduate Committee in Humanities.

The distribution of courses in the MACT is the same as the M.A. except that, in lieu of the thesis in the MACT, six hours may be selected from either philosophy, history, or English.

The selection of periods of specialization and the satisfaction of language requirements is the same as in the M.A. program.

Master of Public Service Degree

This degree is an interdisciplinary program consisting of offerings from several departments. It is designed to prepare individuals to serve in government positions which require administrative training as well as knowledge of the particular areas they are to administer.

Students pursuing the degree can select one of five professional options. They can specialize in agriculture, counseling, child development and family living, recreation and park administration, and regional development. Each option carries specific requirements for admission. Application to this program is made through the Dean of the Graduate College, and after applications have been processed an appropriate advisor will be appointed to plan the student's program.

All candidates for the Master of Public Service degree (regardless of the option chosen) are required to complete a core area of nine to twelve hours including Government 540—Public Administration (which is required of all).

The remaining hours of the core may be selected from the following courses:

Economics 550—Government Financial Policy and Administration
Geography 580—Problems in Urban Geography
Government 511—Seminar in State and Local Government
Sociology 565—Studies in the Community
Psychology 551—Social Psychology of Organizations

Agriculture option

This program is designed to meet the needs of students in, or planning to enter, agricultural or agriculturally oriented professions that are involved in public service. For example, the program may serve those individuals engaged in agricultural extension, conservation, administration of governmental agricultural programs, and agricultural representatives of banks and other financing organizations.

The student should have an undergraduate major in agriculture or a closely related area or be engaged in an agriculturally related profession of the public service nature.

In addition to the core, fifteen of the remaining hours in the thirty-hour program should be in agriculture or in related departments approved by the student's graduate committee. At least eight hours of the fifteen in agriculture should be in courses open only to graduate students.

Child Development and Family Living option

This program stresses clinical practice and is generally taken by persons in child welfare, mental health, and pastoral care. Neither a thesis nor a research tool is required but practicum experience is mandatory for all candidates for this degree.

In addition to Government 540, the other core courses in this degree program are:

Sociology 565—Studies in the Community
Psychology 551—Social Psychology of Organization
Education 558—Counseling Theory and Practice

The 18 hours in the major are the following Home Economics and Family Living courses:

491—Family Life Education
576—Theories of Child Development
577—Seminar in Child Development Research
578—Seminar in Research in Marital and Family Therapy
579—Professional Theories and Methods in Marital and Family Therapy
580—Internship in Marital and Family Therapy

Counseling option

A candidate for the Master of Public Service in Counseling who has not completed a minor or the equivalent in psychology or sociology shall remove this deficiency by completing for non-graduate credit the necessary courses to meet the prerequisite in the behavioral sciences. This requirement must be satisfied prior to admission to the program.

In addition to the core requirements, students pursuing the counseling option must complete three hours of work from either psychology or sociology, as approved by the students graduate advisory committee.

Counselor Education requirements include eighteen semester hours selected from the following courses and approved by the candidate's graduate advisory committee:

Required of all Counselor Education majors in the Master of Public Service degree program:

Education 550—Introduction to Guidance
Education 552—Individual and Group Analysis
Education 558—Counseling Theory and Practice
Education 560—Counseling Practicum

The six remaining hours may be selected from the following courses:

Education 500—Research Methods
Education 501—Education Statistics
Education 530—Vocational Education
Education 554—Group Guidance
Education 556—Informational Services
Education 650—Utilization of Community Resources
Education 656—Seminar in Vocational Guidance and Occupational Adjustment

Recreation and Park Administration option

This program is a non-teacher certification plan with nine hours required in the public service core and twenty-one hours available in recreation and/or related areas. It is specifically designed to prepare individuals for positions of leadership in recreation and park administration.

In addition to the core requirements (pages 123 and 124), the following courses are within the recreation sequence: from which 15 hours may be selected: (for course descriptions, see page 102).

P.E.R. 501—Analysis of Research in Physical Education and Recreation.

Rec. 513—Organization, Administration, and Supervision of Parks, Playgrounds, and Recreation Programs.

Rec. 515—Planning and Maintenance of Park and Recreation Facilities.

Rec. 517—Construction and Utilization of the Survey in Recreation.

Rec. 519—Fiscal Practices for the Administrator of Recreation and Parks.

Rec. 521—Public Relations for Parks and Recreation Programs.

Rec. 481—Camp Administration and Outdoor Recreation.

Rec. 483—Social Recreation.

Rec. 484—Community Centers and Playgrounds.

Rec. 489—Professional Field Experiences in Recreation and Parks.

In addition, six hours may be selected from courses within the field of recreation or from allied areas.

Regional Development option

The Regional Development option is tailored to the undergraduate background and the occupational objectives of the individual graduate student but, in general, will contain an inter-disciplinary program focused primarily upon the subject fields of government, economics, geography, and sociology.

It is assumed that the student will have sufficient undergraduate background (including six hours in Principles of Economics) to pursue the graduate courses required for the degree.

The program will consist of thirty hours, including a nine to twelve hour core. In addition, to the core, the remaining hours would be selected from the following:

Economics 598—Directed Studies (generally in the area of state and local tax problems)

Economics 599—Research and Report Writing

Economics 470—Economic Growth

Economics 540—Land Economics

Economics 570—Studies in Economic Growth

Sociology 440—Cultural Anthropology

Geography 479—Industrial and Commercial Geography

Geography 584—Regional Planning

Special problems in Regional Development (credit to be given in either economics or geography).

In a typical program Economics 598 and 599 would be recommended, and the selection would be made from the remainder. Of the thirty hours required, six may be obtained for a thesis. If a thesis is not written, a candidate may elect six hours within the approved curriculum for this option.

RANK II NON-DEGREE PROGRAM

Students who do not desire to pursue a degree program or who are unable to meet admission requirements for a Master's Degree program on the basis of inadequate point standing or inadequate Graduate Record Examination scores, may be admitted to a Fifth Year Non-Degree Program. This program provides the student with two alternatives:

1. Validating Work for Ultimate Graduate Admission

Students wishing to meet requirements for good standing admission to a graduate degree program may follow a planned program consisting of nine hours of validating work which may be considered in requesting admission to full graduate standing. These courses must be specified by the student's advisor and must be shared between professional education and a cognate area.

If the student maintains a B standing in the validating work, presents an acceptable score on the Graduate Record Examination, and meets the other criteria for admission to a Master's Degree program, he may apply, have his credentials evaluated. Upon the evaluation and recommendation of his graduate advisor and the approval of the Dean of the Graduate College, he may be admitted to a graduate degree program. If admitted to a graduate degree program, his advisory committee would develop and file a graduate degree program in the Teacher Admissions Office and in the Office of the Dean of the Graduate College.

None of the work taken as validating work would apply to the Master's Degree. Credit earned prior to the filing of the validating program may not be used for validating purposes. A maximum of three hours of appropriate graduate work taken prior to the filing of a validating program may be applied to the Master's Degree program if the applicant ultimately fulfills requirements for admission to a graduate program.

If, after attempting the validating work, the student does not desire or fails to gain admission to a graduate degree program, he may follow an alternative plan and apply the nine hours already completed:

2. Fifth Year of Planned Program Leading to Rank II Classification for Teachers

This program consists of 32 hours of graduate and undergraduate work, of which 12 hours must be in professional education, 12 hours in cognate areas, and of the total, 12 hours must be in graduate level courses (not necessarily graduate only). This program must be planned and signed by the student's advisor and filed in the Office of the Dean of the Graduate College.

The same point standing as that for undergraduate certification is required. All credit earned while completing validating work may be used to satisfy the requirements for this non-degree program leading to a Rank II classification for teachers in the state of Kentucky. This program is considered to be terminal, and on the basis of completion of this program, admission to the other graduate programs will be denied.

THIRTY-HOUR POST MASTER'S PROGRAMS

Western Kentucky University offers the following thirty-hour post master's programs in accordance with minimum regulations prescribed by the Kentucky State Board of Education:

1. Rank I—Teacher (program leading to Rank I qualification for teachers)
2. Rank I—Leadership (the Professional certificate for School Administration and Supervision endorsed for School Superintendent)
3. Rank I—Standard Guidance (program leading to standard certification in Guidance)

General Guidelines for the Thirty-Hour Program

The guidelines listed below, which apply to all graduate students who are beginning the thirty-hour post-master's program, have been adopted by the State Board of Education. All students entering the thirty-hour post-master's program who have not had the Graduate Record Examination will be required to complete that exam. In addition, for those persons entering some of the program options, specific minimum scores on that exam will be required.

Students desiring to follow this program should contact the office of the Dean of the Graduate College for advisement and committee assignment.

1. This program shall be planned in consultation with the student's advisor and shall be related to the professional needs of the student.
2. At least 15 of the thirty hours must be taken on the campus (in residence) of this institution. The remaining hours may, upon the approval of the student's advisor(s), be taken at an extension of this university or at another institution.
3. All of the course work shall be in courses which carry graduate credit, but a minimum of 15 semester hours must be in courses open only to graduate students.
4. The student shall have a standing of B on the thirty hours, and no credit in a course lower than C shall be accepted.
5. Students pursuing the Rank I—Teacher program must earn a minimum of 12 of the 30 post-master's hours in academic work

(work not listed as professional education). The student must have a minimum of 24 hours (of the total of 60 for the Master's and the Rank I) in academic work apart from professional education. These hours shall be in the candidate's major, or minor, or area of preparation, or in supporting courses from other disciplines as approved by this institution.

6. Those who qualify for Rank I—Leadership by following the thirty-hour program for the Professional certificate for School Administration and Supervision must complete the Standard Elementary or Standard High School Certificate prior to the completion of this endorsement. As a general rule, Western will require one third (21 hours) of the total of 60 hours (on the Master's and Rank I) to be taken in the behavioral sciences or subject matter fields other than professional education.
7. Those who qualify for Rank I—Guidance by following the thirty-hour program in the area of guidance must complete the Standard Certificate for Guidance Counselors. This certificate is based upon the completion of the curriculum for provisional certification for guidance counselors and a planned program of at least an additional 30 hours of graduate study. As a general rule, Western will require one-third (21 hours) of the total of 60 hours (on the Master's and Rank I) to be taken in the behavioral sciences or subject matter fields other than professional education. The remaining courses will be planned in the field of guidance.
8. The Dean of the Graduate College will certify to the State Department of Education when an approved thirty-hour program has been completed.

Rank I—Teachers' Program

Students pursuing the thirty-hour post-master's program for teachers shall be required to fulfill all of the requirements stipulated by the State Board of Education for this advanced graduate program. Students should contact the office of the Dean of the Graduate College for assignment of a graduate advisor for this program.

Rank I—Leadership Program

In order to be recommended for Rank I through the School Leadership program, the holder of the Professional Certificate for School Ad-

ministration and Supervision must complete the program for endorsement desired. (For an explanation of admission and program requirements, consult Education, School Administration, pages 50-55).

Application to this program must be made through the Graduate College, from which the application will be forwarded to the selective committee for School Administration programs. All criteria for acceptance to this program must be met, and all requirements as stipulated by the State Board of Education must be satisfied.

Rank I—Guidance Program

The Standard Certificate for Guidance Counselors shall be based upon the completion of the curriculum for provisional certification for guidance counselors and the completion of thirty additional semester hours of a planned program for guidance counselors.

The Standard Certificate for Guidance Counselors shall be a continuing certificate.

Application to this program must be made through the Graduate School. This application will be referred to the Department of Counselor Education Admissions Committee for its recommendations. All criteria for acceptance to this program must be met and all requirements as stipulated by the State Board of Education must be satisfied.

A. Professional Educational Courses.

A program consisting of minimum of fifteen hours shall be planned by the student's advisor from the following courses (In some cases, other professional education courses may be substituted):

503—The Elementary Curriculum

404—Adult Education

500—Research Methods

501—Educational Statistics

554—Group Guidance

578—Basic Education for Adults

650—Utilization of Community Resources in Guidance

652—Research in Guidance and Counseling

654—Mental and Aptitude Testing

655—Seminar in Guidance Services in the Elementary School

656—Seminar in Vocational Guidance and Occupational Adjustment

658—Seminar in Guidance and Counseling

660—Organization and Administration of Guidance Services

662—Advanced Counseling Practicum

- B. Subject matter minor requirements related subject matter field (nine to fifteen hours)

JOINT-DOCTORAL PROGRAMS

Joint-Program with the University of Kentucky

An outstanding graduate student at Western Kentucky University who is nearing the completion of the Master's Degree in Education (or who has completed a Master's Degree) may petition to enter the joint program leading to the Ed.D or Ph.D. in Education from the University of Kentucky.

To be eligible for admission to this program, in addition to having met the entrance requirements at Western, the student must meet the entrance requirements of the Graduate School of the University of Kentucky and the usual standards for admission to the doctoral program established by its College of Education.

A prospective candidate must file application in duplicate with one of the institutions. The institution receiving the initial applications will retain one copy for members of its special admissions committee and send the second copy to the Graduate Office of the other institution. The applicant's qualifications will be evaluated by a joint screening committee representing both institutions.

For each student admitted to the program a special advisory committee, known as the Special Doctoral Committee, will be appointed. This committee will represent both participating institutions.

Normally the student will continue in residence at Western Kentucky University for one school year (maximum 30 credits) after being admitted to the joint program. Variations as to period of residence at each institution may be approved by the student's committee in order that he may be better prepared to pass qualifying examinations.

Students desiring further information on this program should contact the Dean of the Graduate College, Western Kentucky University.

Joint-Program with George Peabody College

This program is designed for outstanding graduate students who desire to pursue a program leading to the Ed.D. degree with emphasis in educational administration. Requirements for admission to both the Graduate School of Peabody and the Graduate College of Western must be met.

After having completed the Master's degree at Western, a student may apply for admission to the joint doctoral program. A special graduate admissions committee will evaluate the student's credentials and must make favorable recommendations to the Graduate School of Peabody.

Upon admission to the joint doctoral program, a joint advisory committee will be appointed. This committee will represent both institutions.

Normally, the following guidelines will be followed:

A maximum of thirty semester hours may be transferred from the master's degree program.

Related work beyond the master's degree can be transferred from the following fields only: government, economics, sociology, and psychology. All work transferred must be taught by a member of the graduate faculty who holds an earned doctorate.

The minimum total for the Ed.D. degree is seventy-two hours, exclusive of research tools. Sixteen semester hours of work beyond the master's degree (in addition to six hours of research tools) can be transferred, for a total, with the master's degree, of forty-six graduate hours. Of this total of forty-six hours, a maximum of thirty hours may be in education, including not more than fifteen hours in educational administration and supervision.

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